

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Machine for Hot-Straightening Rods and Bars.

Like all the machinery used in rolling iron and steel, straightening machines must combine efficiency and rapidity in operation with exceptionally strong and compact construction of parts. To secure these qualities has been the aim of the constructor of the hot-straightening machine shown in the accompanying illustration. The object in view has been to seize the bars or rods to be straightened immediately after they have left the rolls and are still hot and uniform in temperature, to stretch them with sufficient force and sufficiently rapid to take out all bends and curves, and then to allow them to cool without having their correct form injured. These were the main features which were to be embodied in the machine, and how Mr. Stephen W. Baldwin, of Yonkers, N. Y., has solved the problem will be seen from the following description: At the end nearest to the rolls is a clamp-head or head-stock, which slides in a U-shaped groove, the movement, which can reach a maximum of 2 feet, being effected by power by means of the arrangement shown in the cut. At the other end of the bed or frame, which is long enough to allow the working of bars about 80 feet in length, is another sliding head, the tail-stock, which can be moved by hand along the whole length of the bed, as may be required by the various lengths of the bars to be straightened. As will be seen, it runs on two wheels on a rail. The machine is operated as follows: One end of the hot bar, as it comes from the rolls, is firmly clamped in the head-stock, while the other end is secured in the tail-stock, which is so constructed that simultaneous with the clamping of the bar the tail-stock is firmly fastened to the bed-plate so that it cannot slip. Power is then applied and the slide is dragged forward with an intermittent, jerky motion, which rapidly straightens the bar and stretches it, the proper limit being determined by the operator. The clamps are released and the bar is carefully slid over to the adjoining hot-bed, where it is allowed to cool. The fact that the hot-bed on which a bar is lying in our illustration is on the same level and quite close to the straightening bed, avoids all danger of bending or twisting after the bar or rod is straightened. The work for one set of rolls is done by two boys as fast as the bars are delivered from the rolls.

SCIENTIFIC AND TECHNICAL.

Mr. George Burnham, Jr., in an article contributed to the *Journal of the Franklin Institute*, speaks of

SOME RECENT APPLICATIONS OF THE FLEXIBLE SHAFT.

One of these, important to engine builders and foundries, is the cleaning of sand from castings. After some unsuccessful attempts with ordinary wire brushes, an entirely new principle was adopted, which was found to meet all requirements. The new brush is made in the following way: Two thin iron disks, about 4 inches in diameter, are mounted on a threaded spindle, one end of which is attached to the flexible shaft. These disks are placed about 2½ inches apart, and are connected by a series of small rods placed at intervals around the circumference. The "hub" thus prepared is not unlike a small squirrel cage in appearance. Upon these rods short wire links are loosely hung, and from the links depend wires of ordinary round steel, about 3 inches long. We have thus a brush whose bristles are held to the backing by a free joint instead of the usual rigid connection. When stationary the wires hang perfectly limp, but when in motion, at the proper speed, the centrifugal force keeps them normal to the axis until the surface to be cleaned is reached, when they yield and drag across it. It is found in practice that the brush so constructed is as efficient as the stiff brush, and is much more pliable, adapting itself better to irregularities in the surface, while the wear is entirely confined to the joints and gradual abrasion of the ends of the wires. Wheels for sand-papering woodwork, made upon the same principle, have been tried and found very effective. The sand-paper is cut into circular disks, which are strung on an appropriate mandrel, each disk being separated from its neighbor by a small washer. This arrangement gives the tool great flexibility, and at the same time does away with the inconvenience of frequently renewing the cutting surface inherent in the plan of wooden centers covered with sand-paper, since it is effective until worn nearly to the center.

All the systems tried hitherto to convert the bodies of human beings into ashes have depended upon the employment of intense temperatures. The inconveniences inseparable from this method of decomposing tissues holding as much as 75 per cent. of water, have led M. Henri Lissagarray to propose

A NEW METHOD OF CREMATION.

He hopes to do away with an expensive plant and the cost of a large consumption of fuel by adopting the following plan: He first submits the body to the action of superheated steam, which has the effect of charring the tissues to a certain extent, so that when they are submitted subsequently to the action of a dull red heat, they burn readily with a clear flame and without odor. After going through this preliminary calcining process, the body is submitted to the necessary heat in a simple oven, which is extremely cheap when compared with the elaborate Siemens furnaces used elsewhere for cremation. We are unable to judge from M. Lissagarray's description of his method, whether the temperatures employed by him are sufficient to reduce the bones to ashes also, but are inclined to believe that he will find it difficult to bring them down to a bulk suitable for small ornamental urns, unless he uses somewhat more complicated and expensive furnaces. The idea of expelling as much water as possible previous to cremation proper is a sound one, both as regards fuel economy and time consumed. This method tends to increase the output of a furnace and thus lessens the cost.

Early in the beginning of this century the great Faraday, then quite young, sought to convince his contemporaries that there existed, besides the three well-known forms of matter—the solid, fluid and gaseous—a fourth, which he called

RADIANT MATTER.

While he succeeded in demonstrating the

duce a permanent impression by weakening its phosphorescence. In order to illustrate the mechanical action of the impact of the radiant matter, Mr. Crookes moved a little wheel with mica paddles, mounted on a glass track within the vacuum tube. The poles were brought into line, one at each end of the track, and the wheel was made to move forward or backward by simply reversing the current. In another experiment he moved a radiometer vane by the impact of molecules excited by the heat from a wire through which a current of electricity passed. He then proceeded to illustrate by experiment the fact that a ray of radiant matter, shooting from the negative pole in a vacuum tube, may be deflected by the approach of a magnet, and he showed by a curious little apparatus that he could deflect it in such a manner that the stream of radiant matter passed by a screen and turned a small wheel mounted behind it. Another phenomenon observed by him and illustrated by ingenious experiments, was that radiant matter produces heat when its motion is arrested. Mr. Crookes demonstrated this fact by showing that the focus became so hot that glass was melted, while in another experiment he caused a piece of iridium-platinum to become white hot, to glow with almost insupportable brilliancy, and finally to melt. Mr. Crookes stated that the highest vacuum he has yet succeeded in obtaining was the 1-20,000,000th of an atmosphere, a degree which corresponds to about the hundredth of an inch in a barometrical column three miles high. In con-

struction, where water is scarce, the application of the best form of water heater; where water is plentiful, the adoption of an improved form of condenser; steam jacketing of the cylinder and mechanical accuracy in the construction of the engine; the application of the system of variable expansion when the work done by the engine varies; in case of winding engines, the adoption of drums of varying diameters; as a general principle, the use of steam at a high temperature, in order to have the greatest possible difference in temperature between the steam when it reaches the cylinder and when it has done its work. In the application of such improvements to ordinary steam engines, the saving in working cost must, of course, first be considered, and in the adoption of all such means of promoting economy as have been alluded to, it may be confidently asserted that the saving in working cost will, as a rule, wipe off the extra first cost incurred in a very short time, since the saving effected will probably vary from 50 to 150 per cent. per annum on the first cost.

The *Scientific American* illustrates and describes

EDISON'S LATEST TELEPHONE.

which is said to be remarkable for its loudness of speech. Both the transmitting and the receiving instrument possess novel features of considerable interest. The transmitter has a mica diaphragm, to the center of which a vulcanite arm is secured by a small bolt, which is connected with one pole of the battery. Its head is platinum-faced and is sunk deeply in the vulcanite

other. By means of a slide in the eye-piece any portion of the double spectrum may be presented to the eye alone, and will then constitute a good object for comparison.

Mr. T. Kinnear, sanitary inspector of Dundee, gives, as the result of his observations, the following on the

ACTION OF SEWER GAS ON ZINC AND LEAD.

He watched the effect of the gas on portions of the zinc eaves of buildings where it was striking on the under part, and found, in the course of a couple of years or so, pretty large holes eaten completely through, showing that that material could not long withstand the effect of the gas. Lead is, of course, more durable than zinc, but the difference is only a question of degree, as shown by the fact that, in not a few of the water-closets repaired by the officers of the department during the year, small apertures were found in the main vertical lead pipe, and in the cross or horizontal one leading from it to the trap of the closet various perforations were found on the top, indicating clearly the operation of foul air from the drain. Lead traps and soil pipes from water-closets, baths and fixed basins are all subject to wear and tear; but the traps, being burdened with the additional strain of barring the passage of sewer gas, do their work less efficiently, and for a much shorter period, than they are generally credited with; hence the necessity for proper ventilation and occasional inspection.

An Improved Cementation Process.

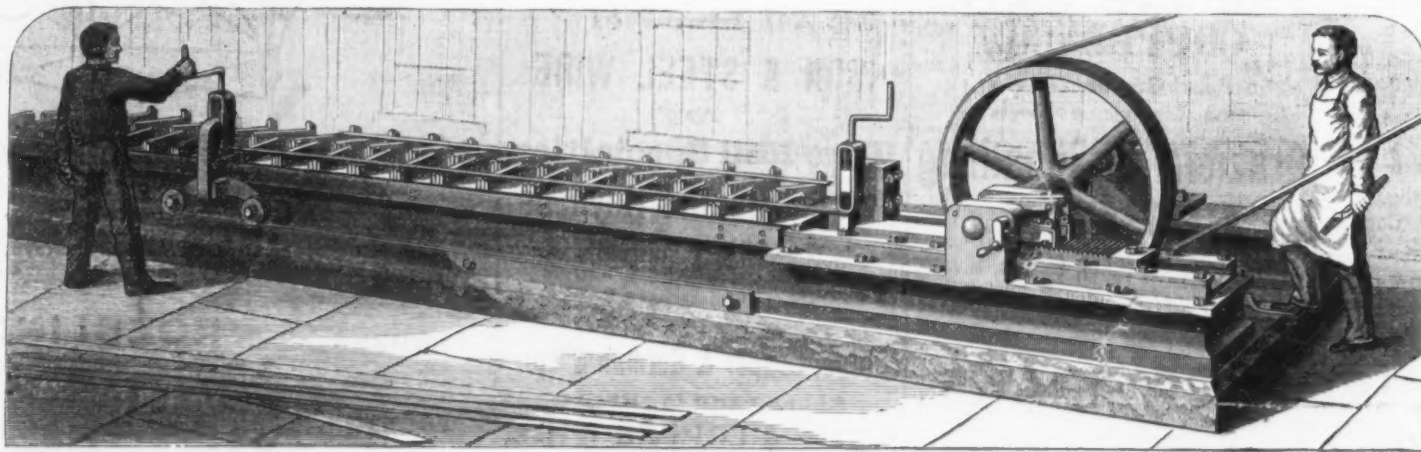
The *Universal Engineer*, in a recent issue, describes a process used for the conversion of cast iron or Bessemer steel into cement steel. The metal is maintained for some hours at a red heat, in the middle of a mass of charcoal, over which is slowly passed a current of nitrogen, carbonic oxide and various gaseous hydrocarbons. Wood, charcoal, pent, coke, well dried and heated to a temperature of about 122° Fahr., is plunged into some hydrocarbon, such, for instance, as schist oil, which has been heated to the same temperature. Under these conditions the liquid is absorbed by the carbonaceous substance in the proportion of from 12 to 15 per cent. A pile is then formed of alternate layers of bars of Bessemer metal, Martin iron, or other product resulting from the refining of pig iron. The whole is placed in a receiving apparatus, which

consists of a kind of retort of any shape, heat being applied gradually until the iron reaches a red heat. By these means oxygen is consumed, carbonic oxide formed and the hydrocarbon vaporized, while the nitrogen assists in the formation of ammonia, so that the metals are surrounded by the gaseous mixture, which is recognized as being the basis for their conversion into cementation steel. But, as it may occur that the source of production of the cementation gases are exhausted by distillation before a complete conversion is obtained, this inconvenience is avoided by sending through the apparatus a current of carbonic acid, either alone or mixed with nitrogen. When the gaseous mixture is derived from the products of combustion of the furnace used for heating the apparatus, its free oxygen is finally eliminated, and it is transformed into carbonic oxide by passing it over red-hot coals before conducting it over the metals. The Siemens, Fomard, Müller, and other producers make a mixture of gases which can be used for the heating of the apparatus, as well as for transforming the iron into steel. The gases which escape blast furnaces may also be used for this double purpose. When, on the contrary, the gaseous mixture is obtained by the direct calcination of limestone, or by that of a mixture of limestone and coal, the gases obtained are sent directly into the apparatus in which the layers of coal and of metal are placed.

The introduction of American anthracite coal into Switzerland has had the effect of directing the attention of Swiss engineers to their own mines. Americans have taught them that anthracite is excellent fuel, and they have learnt from us how to use it. They urge that it would be possible to mine the large amount of coal used by the country (almost 500,000 tons) hitherto imported, from their own anthracite coal basin. In support of their claims for the domestic coal, they give the following analysis of the coal taken from the field which extends from Saint-Maurice to Brigue, in the Valais:

SIEHDON MINE.	
Carbon.....	88.66
Hydrogen.....	9.45
Oxygen and nitrogen.....	1.34
Ash.....	8.55
Experiments with this Valais coal for regenerating steam in the locomotive which was sent to Paris by the Philadelphia and Reading Railroad, have been made with good success.	

It is reported that valuable lead mines have been discovered in the vicinity of Spoonville, in Clark and Hot Springs counties, Ark.



BALDWIN'S MACHINE FOR HOT-STRAIGHTENING RODS AND BARS.

probability of its existence, he could not prove it. This was left to Mr. W. Crookes, whose brilliant experimental work in connection with the radiometer has attracted so much attention. His recent researches into the existence and the properties of the ultra gaseous form of matter—"radiant" matter—were brought forward in the Sheffield meeting of the British Association, in a paper which undoubtedly ranks as high as any presented to that venerable institution. It is a very difficult matter to give an idea of his experiments without reproducing drawings of his delicate apparatus, but a short summary of the results obtained may prove of sufficient interest. The fundamental phenomenon in connection with radiant matter is that observed when the discharge of an induction spark is passing through a vacuum tube, a dark space being found to surround the negative pole. This dark space increases in size as the exhaustion of gas in the tube is carried further. Its presence is due to the fact that the decreased number of molecules in the tube permits their moving about for greater distances without coming into contact with one another, the great rarefaction allowing them to obey their own laws without interference. Mr. Crookes claims that when in this state they assume properties so novel and so characteristic, that the application of the term borrowed from Faraday—"radiant matter"—is justified. The first novel characteristic of this ultra gaseous state exhibited experimentally by Mr. Crookes, is that it has the power of exciting phosphorescence. The molecules, which are violently discharged from the negative pole, strike solid matter and cause it to become luminous, and the resulting colors are of every variety. Bulbs of uranium glass phosphoresce green, English glass blue; a diamond shone with as much light as a candle, phosphorescing green, while an emerald gave out a crimson light. Ruby of all shades and colors glowed brightly with a brilliant red tone, and, to show that it was natural to crystallized alumina, he made precipitated alumina glow under the molecular discharge with the same rich red color. In order to prove that this luminosity was due to the direct impact of radiant matter, Mr. Crookes exhibited the curious phenomenon that it absolutely refuses to turn a corner. Radiant matter comes from the negative pole in straight lines, and where solid matter intervenes a shadow is thrown. Mr. Crookes also showed experimentally that radiant matter is projected with great force from the pole, and that the molecules hammering away at the glass of the vacuum bulb, for instance, pro-

clusion, the lecturer said that "We have actually touched the border-land where matter and energy seem to merge into one another, the shadowy realm between known and unknown, which for me has always had peculiar temptations. I venture to think that the greatest scientific problems of the future will find their solution in this border-land, and even beyond; here, it seems to me, lie ultimate realities, subtle, far-reaching, wonderful."

English papers contain the statement that an

IMPORTANT DISCOVERY IN TELEGRAPHY

has been made in Germany by Prof. Klinkerfues, of Göttingen. The improvement referred to consists of a method by the help of which it will be possible to dispatch as many as eight different messages simultaneously along a single wire. An apparatus has likewise been devised by which all the messages will at the same time be mechanically written down.

Mr. Emerson Bainbridge has read before the British Association a paper on the

QUANTITY OF HEAT UTILIZED IN THE STEAM ENGINE.

According to him, only 11 per cent. of the actual heat power contained in the fuel is utilized, and though a large proportion of that loss can never be overcome, the importance of the inquiry is evidenced by the fact that every 1 per cent. gained means, in the consumption of coal in England alone, a saving of about half a million tons per annum. About 50,000,000 tons, he said, were annually used in the production of steam, which was about 37 per cent. of the whole output. The coal used in dwellings, great as was the waste, was more fully utilized than when it was used in any other way; thus 13 per cent. of the heat actually possessed by fuel was given off in an open fire-place. The author then gave the results of an experiment he had made with the winding engine and boilers of a small colliery, such plant being nearly 30 years old. Some of the improvements which might be made with a view to promoting economy of fuel, were the fixing of boilers of an improved construction, with a minimum thickness of plates and a maximum area of heating surface; special attention should be paid to the manner in which air is admitted to the fire and to the working of the damper; the air intermingled in the fire-grate should be so intermingled with the gases from the fire as to enable a minimum quantity of air to be used; the application of such form of fire-grates and such mode of firing as will enable the cheapest quality of fuel to be used; the complete covering of all exposed hot sur-

arm, the cavity containing also a piece of carbon which fits it loosely and is rounded at both ends. Its outer end is pressed by a platinum-faced spring, secured with one end to the vulcanite arm and carrying at the other, opposite the piece of carbon, a small brass weight. A wire or piece of copper foil, connecting with the spring, completes an electrical circuit, which includes the primary of an induction coil contained by the rectangular box. The secondary wire of the induction coil is connected with the telephonic line, and a tertiary coil which envelops the secondary is connected with the rubber and chalk cylinder of the receiving instrument. The latter consists of a chalk cylinder saturated with a solution of phosphate of soda and rotated by means of gearing. The chalk cylinder moves by platinum-faced rubber, which is connected with a diaphragm. The operation of the instrument is as follows: The vibration of the diaphragm of the transmitting instrument varies the contact between the carbon and the two electrodes, so that a varying current is sent through the primary of the induction coil; this of course produces a secondary current of varying intensity in the secondary wire of the induction coil, which being in circuit with the secondary wire of the induction coil of a distant instrument, produces a current in the tertiary wire wound around the secondary coil. The tertiary current passes through the chalk cylinder and the platinum-faced rubber, and as the chalk cylinder revolves the friction of the rubber is varied according to the variation of the primary, secondary and tertiary currents. The platinum-faced rubber is connected with the diaphragm, and the friction of the rubber is sufficient, when no current passes, to pull the diaphragm forward as the cylinder is turned; but when the slightest current is sent through the primary coil, the induced tertiary current transforms the frictional surface of the chalk into a frictionless surface and the diaphragm springs back. All this to describe a single vibration of the diaphragm, thousands of which are required for the utterance of a signal sentence.

A German, Herr Hirschberg, has devised an improved

INSTRUMENT FOR DETECTING COLOR BLINDNESS.

which may be of interest, as the incapacity of many employees of railroads, steamboats, &c., to distinguish colors is attracting much attention in this country. His apparatus is an adaptation of the spectroscopic to the requirements of the special case. The spectroscopic contains a fixed and a movable collimator tube, so that one spectrum can be moved above the

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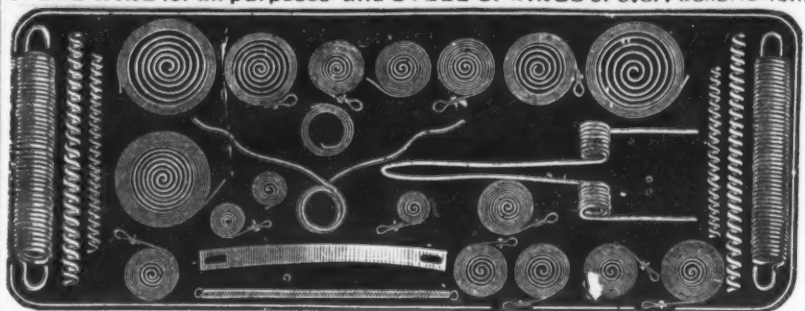
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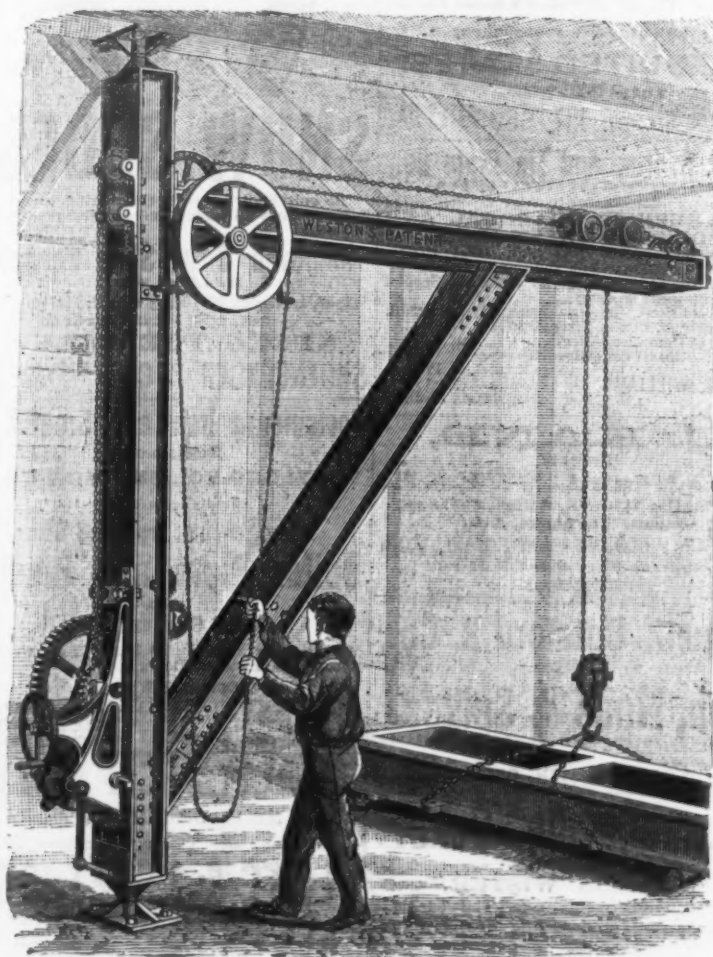
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Industrial Arbitration and Conciliation.

The following paper was read before the American Social Science Association, at its Saratoga meeting, September 12, by Mr. Joseph D. Weeks, of Pittsburgh, Associate Editor of *The Iron Age*. Mr. Weeks has made himself an authority on the subject of industrial arbitration, and his views on the subject will be read with interest in this country and in Europe.

It is not the object of this paper to discuss the relation of capital and labor further than may be desirable to indicate the lack, and to enforce the necessity, of some efficient system for the relief of our industries from the burden of industrial strife. I realize that it is at the expense of completeness of argument that I exclude the discussion of some of the questions that these relations suggest, but I must suffer this that I may better keep in view the one subject to which I wish to give prominence—industrial arbitration and conciliation.

While the present constitution of industrial society continues, differences will arise between employer and employed. With no better methods of harmonizing these differences than those to which resort is generally had, they will grow to disputes and end in strife. Sometimes these contests are justifiable—often not. But in every instance when the battle has been joined and the contest decided (a decision very rarely the result of judgment and reason, but one forced by other considerations) what has been gained, what decided? A battle has been fought, a victory won or a defeat suffered. That is all. And what is a victory won under such circumstances worth? For what does it count in the light of our civilization? Have 6000 years of toil, with this labor problem ever pressing, found no better judge, no kindlier umpire than brute force?—than hunger and greed? At the end of every strike or lockout there is always one practical problem that loudly and urgently demands a solution—to find out some means by which the existing organization of industry, not some system yet to be devised, can be made to work without these wasteful contests that are so frequent as to seem well-nigh an essential part of the system. The future may be hopeful, may have in it the perfect solution of the labor problem; but we need a system that shall take labor as it is and capital as it is, and their relations as they are; that shall prevent their differences from becoming disputes, that shall settle contests if they arise, or at least shorten their duration and mitigate their horrors; that shall give passion time to cool and permit reason to assert its sway, and thus give time and opportunity to discuss the future organization of industrial society in which there shall be no place for strife.

I believe that arbitration and conciliation is such a system. Not that it is the solution of the labor questions—only on the road toward it. As Rupert Kettle, one of the ablest and most earnest English advocates of arbitration, says: "It is the best system yet devised for adjusting the relative rights of masters and men under the present constitution and action of their joint productive power."

In discussing whether arbitration and conciliation offer our industries such a system, it may be well to ask—

1. What is the problem that presses for immediate solution?

2. Have boards of arbitration and conciliation, where they have been established and fairly and faithfully tried, solved this problem without strikes and lockouts?

3. Do these boards give hope that from them and their operations shall grow juster and more harmonious relations between the capitalist and the laborer?

As to our first point. The question that most largely enters into industrial contests is the wages of labor.* The contest may be broadly as to the basis of computing these wages, or narrowly what shall these wages be in a given case. In either case it is evident that labor is not satisfied with the solutions given. It accepts the result, be it a victory or defeat, only as a temporary expedient, and anticipates and prepares for future struggles. The basis of this dissatisfaction is a belief that in the division of the product of the joint action of labor and capital, labor does not get its fair share. The complaint is both against the division and against the plan upon which the division is made. This complaint grows in intensity with each struggle, and accumulates power with each succeeding year. The form of the complaint is changing, however. It is growing less and less hostile, and is developing into an earnest, dignified demand that, as between the laborer and the capitalist—the employer class, if you will—some more equitable plan shall be adopted for apportioning the ultimate product of their joint action. The perfect answer to this demand is the solution of the wages problem.

Answers to it are not wanting. The socialist, the economist, the philanthropist have their views as to the plan to be adopted. To the first and last the manly, honest workman answers that he is not a pauper. He neither demands aid from the State, nor does he ask alms of his fellow. He demands as a right that he receive the best price; yes, the highest price for his wealth-producing power. To the economist, who tells him that the equitable logical plan is found in the free action of the law of supply and demand, that his proportion of the ultimate product of the joint action of capital and labor is determined in accordance with this law in the open market, he answers with the question: Granting that labor is a commodity to be bought and sold, how, under existing circumstances, can you apply this solution to my demand? Where is the labor market where buyer and seller can congregate, and where can be carried

* The questions that are constantly arising in every workshop are, in nearly every instance, directly or indirectly, questions of wages: piece work, eight hours, half holidays, overtime, quality of metal, speed of machinery, dampness of yarn, apprenticeship, introduction of machinery, free house, free coal and scores of others are essentially questions of wages. That class of questions that often gives rise to strikes and lockouts, so aptly termed by Judge Kettle "questions relating to matters of sentiment," are to be excluded from this category, but these are happily less frequent in this country than in others where the dominant and servient relations are retained, both in form and words.

on what Adam Smith terms the "biggling and bargaining of the market?" The price due to supply and demand is not indicated by a single transaction made in private, nor in a multitude of such transactions, but in a multitude made publicly. A year hence these private transactions may become known, and then we can tell what the market was to-day; but this is of no practical value to the laborer who wishes to sell his labor to-day. What he needs is some labor exchange, where numerous buyers and sellers can come together, with its bulletins with authentic information as to abundance or lack of orders, its figures of accumulating stock, competition and the other elements that determine supply and demand, and out of the multitude of whose transactions one can deduce the mean which is the state of the market. Is there any labor market, our workman asks, except an abstract idea? Is it not folly to say that the transactions between an individual and an employer in the privacy of a counting-room, with hunger and want forcing the laborer, perhaps, to accept what is offered—is it not folly to say that such a transaction, or any number of them, constitutes, in any sense that is a practical one, an open labor market where the law of supply and demand has free action? Even if it did, must industry halt or accept wages below the market, until out of the thousands of these individual transactions the true market be established? No number of private bargains can make a market open, free. The problem that presses for immediate solution is to find such a market where the wages of labor can be adjusted without waste or delay.

I believe that boards of arbitration and conciliation similar to those established in the hosiery, glove and lace trades of Nottingham, or in the manufactured iron trade of the North of England, furnish the nearest approach to a free, open labor market that has yet been established; that in such boards buyer and seller can come together, learn the character of the influences that rule the market and so get at its true condition, and thus determine what is the fair price of skilled labor for the time being.

This leads to our second question. Have boards of arbitration and conciliation, where they have been established and fairly and faithfully tried, solved the problem—that is, have they furnished an open market where the wages of labor have been settled without strikes and lockouts?

Unfortunately for our industries, the answer to this question must be sought abroad. There is but one board of arbitration or conciliation in existence in this country—that is the cigar trade of New York City.* The formation and rules of this board are very unlike those of the English boards. There is also, or was, a board of arbitration in the shoe trade of Massachusetts, but under its organization the employers have no representation, and in other features it materially differs from the arbitration boards of England†. It should be said also that when questions of labor have arisen in certain trades, it has been customary to form conciliation committees for the emergency, which have discussed and endeavored to decide these questions. This is notably true in the iron trade at Pittsburgh. In the same sense as practiced in England, however, arbitration and conciliation have no existence in this country. A word as to the formation and methods of these English boards‡ may not be out of place, although they have been described in papers read before this association.

First, it is important to distinguish between arbitration and conciliation. Though the former is the word most commonly used in referring to the system, there is an essential and important difference between arbitration and conciliation, and in this difference is to be found in a large measure the secret of success of these boards and the reason of their continued existence.

Arbitration deals with the larger questions of the trade; conciliation with the smaller; arbitration with the whole trade; conciliation oftener with the individual. Conciliation is not formal; it does not attempt to sit in judgment and decide in a given case what is right and what is wrong, but its efforts are in a friendly spirit to adjust differences by inducing the parties to agree themselves. It removes causes of dissensions, and prevents differences from becoming disputes by establishing a cordial feeling between those who may become parties to the same. Conciliation, in a word, may be defined as "informal arbitration."

Arbitration, on the other hand, is formal. It sits in judgment. It implies that matters in dispute, by mutual consent or by previous agreement, have been submitted to arbiters and an umpire, whose decision is final and binding on both parties. With this distinction in mind, it will be easier to understand the success of the English boards, which combine both arbitration and conciliation.

These boards, as organized in England, are purely voluntary. They have no sanction of law—no legal existence. There is no forced submission of disputes, nor is there any power except a man's sense of honor, public opinion and the aggregate honor of the trades' unions or the employers' associations to enforce the acceptance of the awards; and to the honor of the parties involved be it said, that except in a very few isolated and unimportant cases, these have been found sufficient.

The boards are made up of an equal number of employers and employed, each class electing its own representatives. In some boards each establishment has a representative of each class, as in the north of England

* The rules of this board, with a report of an arbitration conducted under them, were published in the *New York Tobacco Leaf* of July 10, 1879. The rules will also be found in *The Iron Age* of October 2, 1879.

† See the eighth annual report of the Massachusetts Bureau of the Statistics of Labor for an account of this board.

‡ A full account of the organization of these boards, their rules and practical operations, will be found in a report of investigations made by me in England in 1878, as special commission of the State of Pennsylvania.

There is a law on the English statute books, passed in 1824, providing for compulsory or legal arbitration. This law, with one passed in 1867 and another in 1874, has never been repealed, but has never in a single instance—certainly not lately—been used.

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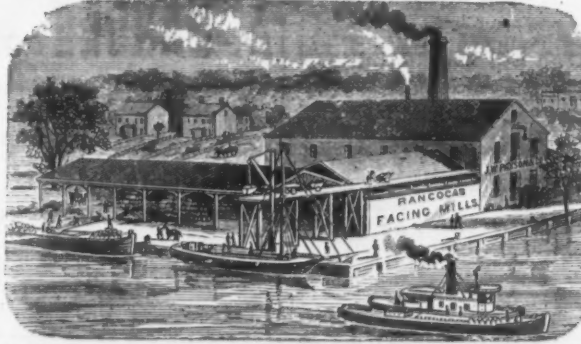
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iron trade. In other cases groups of establishments elect the members, as in the lace trade of Nottingham. The officers of the boards are generally a president and vice-president, one an employer and the other an employee, and two secretaries, one for each class. The two classes have equal influence and an equal vote on all questions. Meetings are held monthly, quarterly or less frequently, at which all subjects at issue are discussed and settled, if possible. In all of these boards there is a provision for settling minor disputes by conciliation without convening the entire board. Failing a settlement in this way, however, the dispute is referred to the board, when it is generally adjusted, unless it is a subject of some moment. Broader questions, those that affect the trade of an entire district, or of a class, are in the first instance generally referred to the board, and in case the board cannot agree, to an umpire. This referee or umpire is in some cases a regularly elected officer of the board—a standing umpire or referee, as he is often termed—or he may be chosen for the decision of a particular question. His decision is final. The members of the board are clothed by their constituents with plenary powers. The expenses are met equally by each class.

The course of proceedings before the board is very simple. In case of a claim for an advance in wages, for example, the employees' representatives submit, through their secretary, a formal statement setting forth the reasons for the demand—such as an increase in the demand for the goods manufactured and in the selling price for the same, increased demand for labor, higher prices paid in other districts manufacturing similar goods. The representatives of the employers submit a formal statement in reply, stating their reasons for refusing the demand. With these statements before them the justice and advisability of the demand is discussed by the members. The proceedings are without ceremony. No valuable time is wasted discussing parliamentary rules. Statements are made and questioned or impeached. Proofs are canvassed, estimates compared, statistics set forth, the strength of competition measured, and as a result of this "higgling" and "bargaining" a price is agreed upon, or, if it cannot be, a disinterested bystander is appealed to to decide what is just and best under the circumstances. Is not this an exchange—a labor mart? Is not a price for labor arrived at under the circumstances as likely to represent the true state of the labor market as one fixed in a counting room?

It has been argued against this view that in these boards the buyer and seller are not brought together; that a representation of each is interposed between the individual who has his labor to sell and the individual who wishes to buy. This objection would be equally valid against all exchanges or marts and against all prices fixed in them. The farmer in Minnesota who has a bushel of wheat to sell does not go to New York or Liverpool to meet the consumer, nor does the consumer go to Minnesota, but the dealer or broker in Chicago who represents 10,000 farmers meets the buyer who represents 10,000 consumers, and the sale is made in open market. The employee members of the board represent the 10,000 days' labor for sale, and the employer members those who desire to purchase this labor. Is there any difference between the arbitration board and the Chicago board of trade? Is not one just as much in accord with the laws of trade as the other? Is there any better reason why the individual workman should sell his labor directly to the individual manufacturer than that the farmer should sell his bushel of wheat directly to the Englishman who wishes to eat it? In a word, would not the conditions of a fair, open market be as well met by boards of arbitration for labor as by the corn, cotton or stock exchange for these commodities? On this point I can do no better than to adopt the words of Judge Kettle: "I verily believe that, without limiting the influence of fair competition, boards of arbitration properly worked afford the best means of fixing the market price of a fair day's work."

The practical part of our question still remains: Have these boards where they are in force solved the particular phases of the wages question presented to them without strikes and lockouts? As the result of a most careful inquiry and investigation, I do not hesitate to answer, yes! Further, I am forced to accept the testimony of the very able and intelligent men who have been prominent advocates of arbitration, such men as A. J. Mundella, one of the members of the House of Commons for Sheffield, Judge Kettle, Thomas Hughes, Lord Derby, David Dale; and among the representatives of labor, Thomas Burt and Alex. Macdonald, who represent the coal miners in Parliament; the late John Kane and Edward Trow, the representatives of the ironworkers' union; Geo. Broadhurst and Geo. Howell, the present and past secretaries of the Trades Unions Parliamentary Committee. These and many others who have been connected with these boards in one capacity or another, without exception, declare that in the way of settling troublesome and difficult questions of wages without strikes and lockouts, boards of arbitration and conciliation have accomplished all their friends have claimed for them.

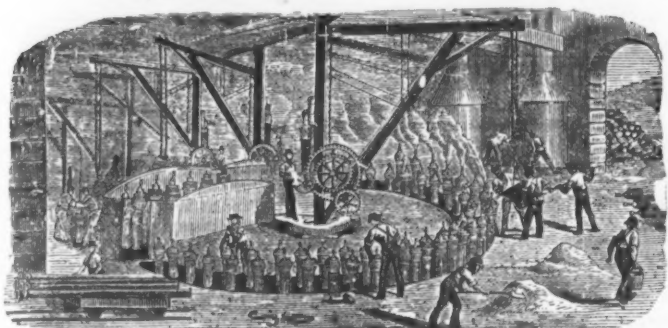
The question of their success in this respect has often been clouded by a false issue. The true issue is: Has the system succeeded in the trades in which it has been tried, not in those in which it has not been tried? The two trades in which arbitration and conciliation have been longest in use and have been used most systematically and continuously, are the hosiery and glove trade at Nottingham and the manufactured iron trade of the north of England. Previous to the establishment of boards of arbitration in these trades they were in constant ferment arising from labor troubles. Luddism had its christening, if not its birth, in the former, and there were three labor struggles in the latter in the

* It may seem that I am framing a man of straw to knock over. That I am not, the following extract from a recent issue of a prominent trade journal will show: "Our objection to them (boards of arbitration) is * * * that they will rather tend to increase both strikes and lockouts. Great Britain has numerous boards of arbitration, and yet there were 181 labor strikes in that country in 1877, and 277 in 1878."

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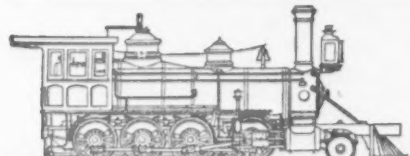
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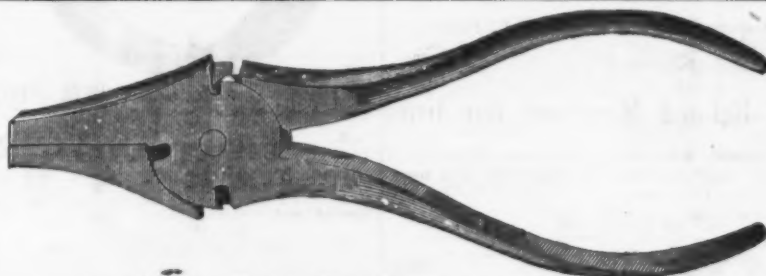
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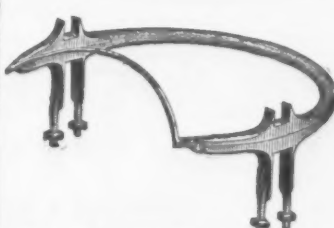
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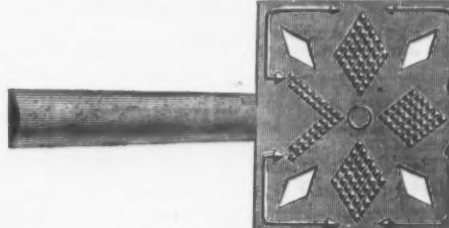
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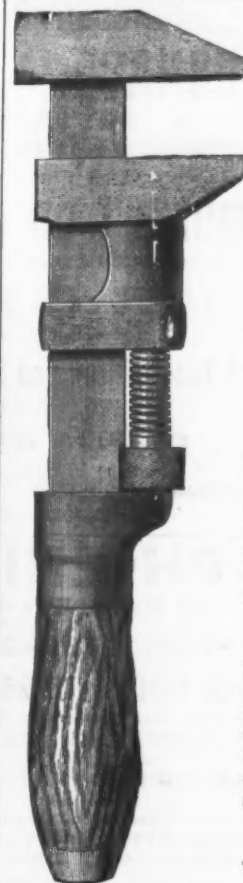
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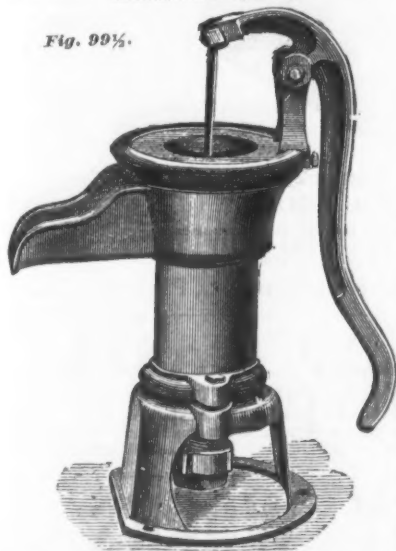
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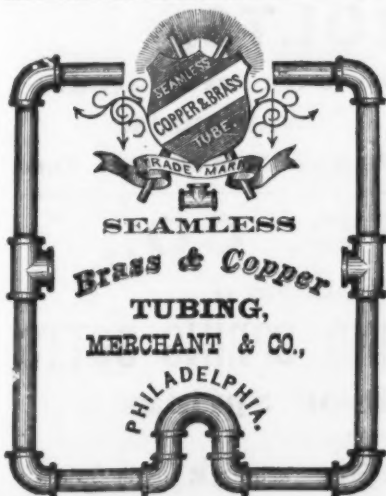
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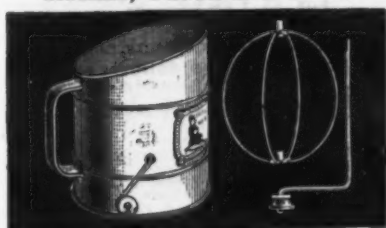


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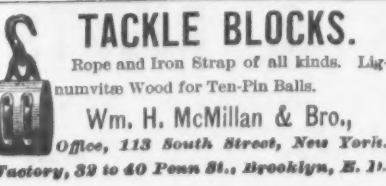
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We beg to call the attention of Architects, Builders,
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liable to get out of order. The springs are made from
wire made expressly for us, and for this particular
purpose, with the view of great elasticity, durability
and power. They produce a continuous pressure
from the point where the door is wide open until it is
closed, and then hold it perfectly in position. It has
a solid pin in connection with short hollow ones,
causing little or no friction, the whole power of the
spring being exerted in swinging the door. It is Fast
Joint, and can be used for either right or left hand,
allowing the dealer to carry less stock, and the builder
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The blade is best cast steel, spring temper, easily sharpened, and is

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parties once using it are unwilling to do without it. Its sales are fast in-

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year previous to the formation of its board. In the hosiery and glove trade since 1860, the year its board was formed, there has not been a general strike nor a single difference about wages that has not been settled amicably. As to the north of England iron trade, an article in the *Colliery Guardian* of London, of Feb. 14, 1879, states that since the organization of its board in 1869, "There has been industrial peace in the district. Except in one isolated case, every decision of the umpires in the iron trades has been acquiesced in with unanimity." Now, here is the evidence of two trades in which it has been fairly tried, in one case for 20 years and in the other for ten years, two trades that in their character are very unlike. If the above statements are true, and they are susceptible of proof, it is a sufficient answer to the question of success. Though there may have been a thousand strikes in the Lancashire cotton trade, where it has not been tried, I fail to see what that has to do with the question of the success of arbitration. Though there may have been 277 strikes in other trades, the question at issue is, Have there been any in the hosiery and glove trades at Nottingham, or in the manufactured iron trade of the north of England? Has it saved 50,000 Durham miners and five times 50,000 dependent upon them from the horrors of an industrial war? Is not the fact that strikes and lockouts are frequent in other trades and not in these, an argument for arbitration and conciliation rather than against it? Our third question still remains: Do these boards give hope that from them and their operations shall grow juster and more harmonious relations between the employer and employed? If they do not, their effect can only be temporary. Here, again, I know of no better way of arriving at a correct answer than by asking those who have been connected with these boards to give it. I will not detain you with the very many opinions on this point that I might quote. The experience in the hosiery and glove trade of Nottingham may be regarded as a type, and the testimony is that the benefits its board of arbitration and conciliation have conferred upon the trades are incalculable. A most friendly feeling has taken the place of hostility, and confidence and mutual respect exist where formerly all was suspicion and hatred. Strikes and lockouts are unknown. The changed relations of employer and employed have been recognized. They have met around the same table as equals, and out of all this have come juster and truer views of their rights and duties, such views as will make it impossible for the old conditions to return.

And now, in conclusion. It is evident to the most casual observer that there is a feeling of dissatisfaction and unrest in the labor world that may break forth into revolution without a moment's warning. Just what the form and mode of the outbreak may be no one can tell. But to predict that there must be important changes in the relation of labor to its environments in the near future requires no remarkable foresight. For one I confess I do not see clearly the outcome. But this I do see, that it is possible to bring about such antecedent relations between the capitalist and the laborer, that when it does come it will be peaceful, not warlike; that it will not take the form of Mollie Maguire outrages and Pittsburgh riots. There is a power in the ranks of labor that is too well organized to be ignored. With a force so numerous it is necessary to come to terms. The policy of repression will not always suffice, nor will this force always allow itself to be despised. Is it not better to persuade it to lay down its arms, and to make a better use of its power than in many cases it has done? Is it not better to accept the organization and continuance of unions as inevitable, and endeavor to make them, in the language of the Count of Paris, "a new element of protective power and an earnest pledge of peace." Something must be done, and if the world is wise it will see that it is done in the interests of industrial peace. To this end I appeal to the representatives of both capital and labor, that in this country the method of reason—that is, of arbitration and conciliation—have a trial, at least, in the settlement of industrial disputes.

The Chicago Industrial Exhibition.

(From a Special Correspondent of The Iron Age.)

CHICAGO, Oct. 10, 1879.

The Seventh Annual Season of the Interstate Industrial Exposition of Chicago, which closes on the 18th inst., has proved to be the best of these yearly exhibitions of Western art, industry and mechanical skill yet held. Not only Chicago and Illinois, but all the States of the Northwest, interest themselves in this Exhibition, and bring to it their new inventions and improvements of every description. Of course the display of agricultural implements and machinery is a very large one, and forms one of the most interesting features of the Exposition. This year there are shown ten mowing machines from as many different manufacturers, eight harvesters, six reapers, besides headers, binders and separators, each manufacturer claiming for his machine some special advantages over all others. Most of the agricultural implements and machines are of Western make, from factories of Ohio, Wisconsin and Illinois. There are two entries from Minnesota—one the St. Paul Harvester Co., St. Paul, and the other the Seymour, Sabin & Co., thresher and horse-power manufacturers, of Stillwater. The number of corn planters, shellers, fanning mills, &c., is large, and the entire exhibit of the agricultural hall is very complete. The inventions in this class of machinery during the past year have been unimportant.

Flour mill machinery has a good representation. There are six portable flour and feed mills in operation, two of them of either horizontal or vertical action, and all, with a single exception, of Western make. The farmers and grain shippers are considerably interested in the Frosser twin cylinder car, which is on exhibition. It is something new in the freight car line, and it is intended exclusively for the transportation of grain. It is made of steel or iron, in the shape of a cylinder with flanged wheel tires extend-

ing round the circumference like hoops on a barrel. These hollow cylinders are about 8½ feet long, and 6 feet in diameter on the inside. They are perforated with minute holes, which admit the air, and it is asserted, dry the grain in transit. Very much is claimed by the inventor for this new style of grain car over the old cars, among which claims are its cheapness, smallness, lightness and durability.

Crane Bros. Manufacturing Company, North Jefferson street, Chicago, have one of their duplex steam pumps in operation, supplying the water for the exhibition building. It works very well, and has a capacity of 1500 gallons per minute. Nye & Palmer, 75 Washington street, Chicago, and the McPherson Company of Beloit, Wis., have their steam vacuum pumps in operation. F. C. Wells, 116 South Clinton street, Chicago, exhibits his steam pump; and one of his steam engines runs the machinery in the Agricultural Hall.

The stove manufacturers have a very attractive display of their wares, and one which gives evidence that in this line of manufactures the West is growing very proficient. The Adams & Westlake Manufacturing Company have a novel exhibition of their oil stoves in the shape of a pyramid of stoves 15 or 20 feet high, and 50 or 60 feet in circumference at the base. The Chicago Stove Company make a very fine display of parlor stoves, and the display of Collins & Burgie, 261 to 277 South Canal street, Chicago, is very largely of kitchen and cook stoves. This firm show their "Hay Burner," which is attracting much interest among the farmers of the West where wood and coal is not easily obtained. The "Cabinet Cooker, Heater and Dryer," is a new invention, a combination of stove, range and cabinet. The fire is in the back, the front opens and reveals the oven, or cabinet, with baking shelves and places for kettles and pots. It is claimed for this combination that it will do more cooking, heating and drying with Illinois soft coal than any other stove or range with anthracite coal; that one can cook in it on the same dishes that are put on the table without injury or soiling them; and that heat is generated enough to heat all the rooms of an ordinary sized house. It is made by the Cooker, Heater and Dryer Company, 180 Michigan avenue, Chicago. George H. Hess, 50 Dearborn street, Chicago, has in the Exposition his cook stove. "The most complete summer and winter cook stove in the world." It burns wood, coal, coke or corn-cobs; takes up but little space, and sends forth no heat into the room in summer, though plenty in cold weather. Of the stove manufacturers outside of Chicago who make an exhibition are Rathbone, Sard & Co., Albany, Detroit and Chicago; Michigan Stove Co., Detroit; and the Chicago and Erie Stove Works.

The Union Brass Manufacturing Company, 97-101 Ohio street, Chicago, give a unique exhibition of what can be made of brass. They have a room fitted up with chairs, stand, bedstead and candlesticks, mirrors and mantel ornaments, all of brass. The Western Sand Blast Company, corner Clinton and Jackson streets, manufacturers of ornamental glass, have their glass displayed to good advantage by a pretty little cottage, whose doors and windows show their handiwork. A very handsome exhibit is made by the Missouri Onyx and Mineral Company, 609 Locust street, St. Louis. The marble they show is susceptible of a fine polish, and is in a variety of colors. Blocks are quarried of any size or dimensions for inside finish, paneling and decorating, and for monuments, &c. The quarries of the company are located in Crawford County, Southwest Missouri.

The enterprising manufacturers of builders' hardware, Payson & Co., 1319 to 1325 West Washington street, Chicago, show a number of specimens of their make. Their burglar-proof sash locks are examined with interest. They have three styles. The "Perfect," with oblique arm; the "Standard," with vertical arm; and the "Pinnacle," with horizontal arm. The mechanism of the Payson sash lock has been already fully described to the readers of *The Iron Age*. The Congdon Brake Shoe Company give an illustration of what their brake shoe can do by exhibiting a shoe that has run "more than 67,000 miles" on a Pullman car, between Chicago and New York, on the Pennsylvania Road. The shoe has stood its work well, and looks as if it could be operated a number of thousand miles more before its usefulness was gone. Baragwanath & Pim, Quincy street, Chicago, have their steam jacket in operation, and working successfully in connection with the boilers which supply power for Agricultural Hall. G. Kelly, Chicago, also exhibits Kelly's patent sectional steam pipe and boiler covering. This covering is made in sections, and is said to be perfectly non-conducting, and water-proof.

The number of entries of exhibitors in the official catalogue is nearly 400, and at least 100 exhibitors have come in since the exhibition opened. As is usually the case, the interest is increasing now as the Exhibition draws to a close.

English Hematite Ore for this Country.—Iron has the following on the shipments of ore to this country: There seems every probability that a large amount of the hematite ores of the north-west of England will henceforth be used by the Americans for steel producing purposes. Not long ago an order for 25,000 tons of iron ore was placed with the Holbarrow Mining Company, and they have since completed the delivery of a great portion of this across the Atlantic. Other orders have since been placed, and there are indications that a large tonnage of raw material will be shipped during the remainder of the season. Five hundred tons of iron ore has been sent from Whitehaven to Baltimore this week from Messrs. Mackenzie, Crossfield Mines, Cleator.

The exports of ore from Bilbao, Spain, during 1878 were as follows:

England, tons.....	923,110
France, tons.....	151,558
Germany, tons.....	101,500
Belgium, tons.....	69,396
United States, tons.....	6,354
Total.....	1,251,918

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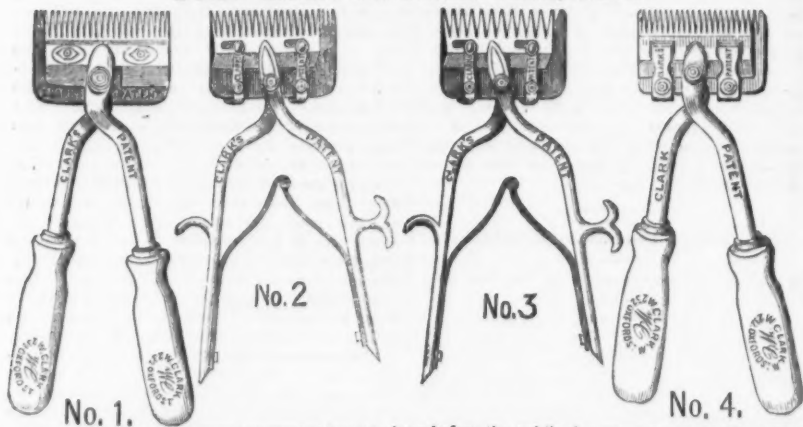
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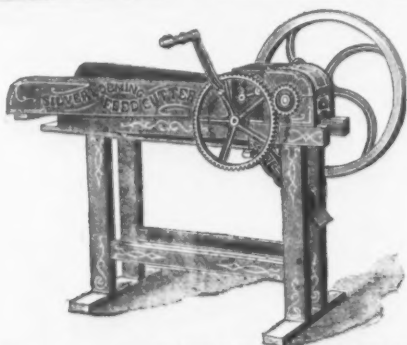
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No. 1.—This well-known instrument has now been before the public for many years, and has given universal satisfaction, and is every where acknowledged to be by far the best, and therefore the cheapest in the market. Nos. 2 and 3 have a no. 1 not with great success. No. 2.—ONE-HANDED CLIPPER, for legs, manes, quarters and difficult parts, leaving one hand at liberty to hold the horse, thus enabling the clipping to be performed by one man only. No. 3.—Same as No. 2, but with coarser teeth, for legs and bellies, and coarse hair, which would break the finer teeth. Avoiding the necessity of getting under the animal, and the consequent liability of accident to the man and also to the machine itself. No. 2 is also used for cutting human hair. No. 4.—A TWO-HANDED INSTRUMENT, with the patent grasshopper springs over the plates. This improvement renders the machine simply perfect, producing a softness and ease of motion not to be surpassed, whilst by the peculiar and continuous self acting pressure of the spring the two plates are kept in passing contact, and the machine requires no further adjustment whatever. These springs are also applied to Nos. 2 and 3. N. B.—No. 4 should be without this set of incomparable instruments. See that all these machines are fully stamped in strict accordance with the above illustrations—none others being genuine. To be obtained wholesale of Messrs. McFARLANE & CO., 134 Duane St., New York, and all merchants in the United States; and retail, of all Saddlers, Ironmongers and Cutlers in the world, and of the Patentee, W. CLARK, 332 Oxford St., London.


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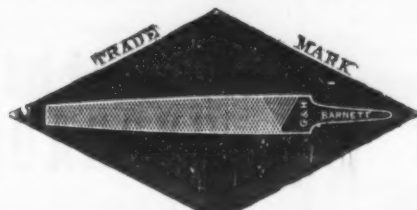
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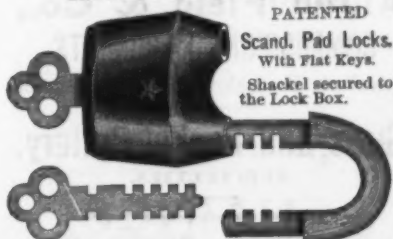
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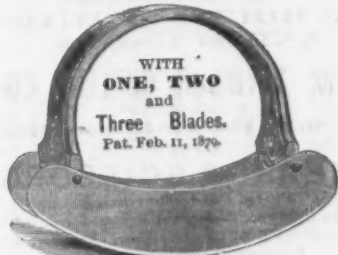


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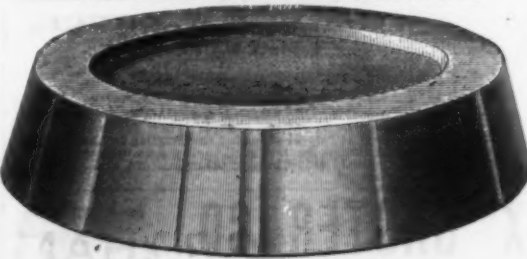
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The properties of these Wheels are such that they can be used with great advantage and economy for cutting, grinding, and finishing Wrought and Cast Iron, Chilled Iron, Hardened Steel, Slate, Marble, Glass, etc. These Wheels are extensively used by manufacturers of Hardware, Cutlery, Edge Tools, Plows, Saws, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agricultural Implements, and small Machinery of almost every description.

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Rubber Back Square Packing

BEST IN THE WORLD.

For Packing the Piston Rods & Valve Stems of Steam Engines & Pumps.

B represents that part of the packing which, when in use, is in contact with the Piston rod.

A the elastic back, which keeps the part B against the rod with sufficient pressure to be steam tight, and yet creates but little friction.

This Packing is made in lengths of about 20 feet, and of all sizes from 1/2 to 3 inches square.

JOHN H. CHEEVER, NEW YORK BELTING & PACKING CO.,
Treasurer. 37 and 38 Park Row, New York.



Beardsley Scythe Co.,
Manufacturers of
GRASS, GRAIN & BUSH SCYTHES,
Hay Knives & Corn Knives,
West Winsted, Conn.

RICHARD DUDGEON,

No. 24 Columbia Street, New York,

Maker and Patentee of the Improved

Hydraulic Jacks

AND

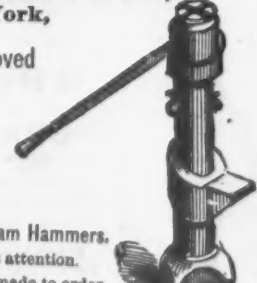
Punches.



Roller Tube Expanders and Direct Acting Steam Hammers.

Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order.



INDUSTRIAL ITEMS.

MAINE.

The Katahdin Furnace is out of blast at present, relining, but will blow in November 1.

VERMONT.

The Pittsford and Shaftsbury charcoal furnaces are out for repairs.

MASSACHUSETTS.

The Theodore Pomeroy Iron Works, formerly operating the Pomeroy anthracite blast furnace at West Stockbridge, have been purchased by Boston, New Bedford, Springfield and Berkshire County parties, and will hereafter be operated under the name of the Pomeroy Iron Company, with Mr. W. M. Kniffen as treasurer. The works are to be started up about the 1st of December, or sooner, if the repairs which are now under way will allow of it.

The puddling furnaces of the Weymouth Iron Company, at East Weymouth, which have been idle for several months, started up on October 6, and the nail works will resume as soon as a proper supply of nail plates is ready.

Cobb & Drew's rivet and tack works, at Plymouth, are running evenings to fill heavy orders. Samuel Loring's tack works share in the general activity. The Robinson Iron Company have been obliged to run evenings until 10 o'clock to supply nail and tack plate to the trade, and altogether the state of affairs in that town is most encouraging.

The Cheshire Furnace is out to stay for the present.

RHODE ISLAND.

William A. Harris, manufacturer of the Harris-Corliss engine, is very busy. Since May last the works have been forced to run until 10 o'clock every evening, and for a portion of the time all night. Orders for 54 engines of their manufacture have been received since January 1, from almost every State in the Union, from Maine to California. Just now the works are under a pressure of work, and among the orders on which they are engaged may be mentioned the following: One 500-horse-power condensing engine for the Boston Manufacturing Company, of Waltham, Mass.; one 425-horse-power condensing engine for the Standard Oil Company, of Cleveland, Ohio, to be placed in their Bayonne (N. J.) works; one 300-horse-power condensing engine for Deere & Co., manufacturers of plows and agricultural implements, Moline, Ill.; a pair of engines of 325 horse-power for the Renfrew Manufacturing Company, of South Adams, Mass.; an 80-horse-power engine for the Norwegian Flow Company, Dubuque, Iowa; one of the same size for the Central Hospital, Jacksonville, Ill.; one 100-horse-power engine for Jacksonville Manufacturing Company, Jacksonville, Wis.; one 80-horse-power engine for Essex Horse Nail Manufacturing Company, Essex, N. Y. They are also setting up a 200-horse-power engine at Noonday, Minn.; Bodine, Cal.; and Edwardsville, Ill.

CONNECTICUT.

F. Willson Rogers, secretary of the Wm. Rogers Mfg. Co. and the Rogers Cutlery Co., of Hartford, has secured a patent for designs on spoon and fork handles. The firm use this design on their goods. The company are also engaged this fall in the manufacture of hollow-ware designs, and have a large force at work in this department.

The Billings & Spencer Company, Hartford, are working 70 hands 13 hours per day, and have orders for about six months to come. The orders for sewing-machine shuttlework were never so good as now. All sorts of machinists' tools are in good demand. Mr. Billings has invented a number of ingenious devices which are having a large sale—pocket wrenches, for which there are large orders from Great Britain; screw plates, ratchet drills, adjustable tap wrenches, &c. Mr. Billings has also invented a breech-loading gun of a most convenient style, which will soon be made for the market. Forgings for revolvers are largely made by this company. All the tools made are of the finest bar iron and steel. Business has been good with the company the past year, and bids fair to increase.

The Weed Sewing Machine Company, Hartford, are crowded with work. About 250 men are employed 12 1/2 hours a day, and work is pressing in every department. A large number of Weed sewing machines are being turned out, and the company are also engaged in filling an order for 15,000 machines for the Eldredge Sewing Machine Company, of Chicago. Of these about 40 are made per day. The manufacture of bicycles for the Pope Manufacturing Company, of Boston, is also an important branch of work. There are about 1000 machines on the floor at present in various stages of progress.

The Russell Mfg. Co. propose building another large building at Middletown. The new building will be of brick, three stories high, with a French roof, 38 x 82. The company will also build an addition to their works at Higganum.

NEW YORK.

It is said that the Rhode Island Horse Shoe Co., who are the lessees of the Buffalo Iron and Nail Co.'s works, have stopped all manufacture of iron, except for horse shoes, and have only 8 out of the 22 puddling furnaces running, and those only on single turn. The Fletcher blast furnace is included in the lease.

The Port Leyden Furnace, at Boonville, has on hand 1400 tons of iron, part charcoal and part anthracite.

NEW JERSEY.

The works of the Malaga Glass and Manufacturing Company, Malaga, South Jersey, have a capacity of 6000 boxes of window glass per month of an average value of \$2 per box, and employ about 130 hands. The office of this company is No. 102 South Fourth street, Philadelphia.

The New Jersey Steel and Iron Co. have purchased the tools and stock of the old chain mill at Trenton, and have moved them to a new building erected for the purpose. The shop is running to its fullest capacity, as are all other industries in Trenton.

DELAWARE.

The iron trade in Wilmington is quite brisk. All the foundries, rolling mills, car-

shops and boatbuilding establishments are running full time with full complement of hands.

PENNSYLVANIA.

The Mansfield anthracite furnace, at Mansfield, Tioga County, with 800 acres of good timber land and 75 acres of ore land, is for sale. The furnace is out of blast, but in repair.

Stock No. 2 of the Mt. Hickory Iron Co.'s (Limited) furnace, at Sharpville, will go into blast as soon as the new blowing engine is in place.

There has been some talk of putting the Erie furnace, at Erie, into blast, but the want of ores will probably prevent it from starting up this season.

The rolling mill of the Mt. Hickory Iron Co. (Limited) at Erie is on double turn and overwhelmed with orders.

The Port Carbon furnace, Schuylkill County, will be ready for lighting in about six weeks.

Riehle Bros. received a silver medal for testing machines and a bronze medal for delicacy of adjustment and stability of platform on hay and cattle scales, at the late Pennsylvania State Agricultural Society's fair, in the permanent exhibition buildings at Philadelphia.

The Ringgold Anthracite Furnace in the Schuylkill Valley has been leased to David Longenecker, Jr. After some slight repairs are finished, the furnace will be put in blast.

The lease of the Bechtelsville Anthracite Furnace in the Schuylkill Valley is still under negotiations.

The rolling mill of the Hamburg Iron Company, Hamburg, Berks County, started up on the 9th inst. It is operated by Messrs. Wister, Fisher & Fox, who leased it from the Philadelphia and Reading Railroad Company.

The managers of the Girard Wrench Manufacturing Company (Limited), Girard, Erie County, are unable to fill their orders by running 12 1/2 hours per day.

Wile, Siedel & Co., crucible manufacturers, of Philadelphia, are now filling a large order for Europe, and are about shipping some of their manufactures to Liberia, Africa. They have made a number of shipments to different parts of Europe, and have given such satisfaction that the orders have greatly increased. All their foreign orders were unsolicited.

The Madison Charcoal Furnace, at Sligo, Clarion County, is entirely dismantled. This furnace was operated by Lyon, Short & Co. There has been no charcoal iron made in Clarion County for six or seven years. The Red Bank Coke Furnace, the only one that has made any iron in this county of late years, is now out of blast.

Kimberly, Carnes & Co., Sharon, are adding four single boiling furnaces to their muck mill at the Atlantic Works.

Week before last the employees of Weimer Bros.' Machine Works, Lebanon, commenced working 12 hours a day—from 6 in the morning to 12, and from 12.40 to 6.40 p. m. In a few weeks some of the departments will be run until 10 o'clock.

The Connellsville Machine and Car Company are working full time in all branches of their foundry. Machine and forging shops and car shops are all full of work. They are employing three times the number of hands formerly employed. The company find great difficulty in getting foundry and manufactured iron promptly.

Gellender & Sons, of the Franklin Glass Works, Philadelphia, have just completed a second large furnace, which gives them a melting capacity of 75 tons weekly.

The Etna Iron Works (Limited), New Castle, are busy in the various departments of their mill. They now have 5 heating furnaces, 21 boiling furnaces, 2 more being built, and 55 nail machines, turning out daily about 500 kegs of nails.

The charcoal blast furnace (Forest) at White Deer Mills is out of blast and will probably never blow in again.

The Cambria Iron Company, at Johnstown, is erecting a new engine in the steel rail mill. The engine is a Porter engine, 40 inches diameter of cylinder and 4 feet stroke, and is intended to run at a speed of about 100 revolutions per minute. It will be connected with the roll train directly. A new stand of roughing rolls is to be erected, but the same stand of finishing rolls will be retained. When the improvements are completed it is expected that the capacity of the mill will be greatly increased.

The rumor that the old Brady's Bend Iron Works, on the Allegheny River, was to be put in repair and started is without foundation. The mill and furnaces are in too dilapidated a condition to be put in repair without very heavy expense, and the iron produced is not of a high quality.

The rolling mill at Lancaster has recently been purchased, by an association of capitalists, from the American Life Insurance Company, into whose control it passed several years ago by foreclosure of mortgage. The new organization will be known as the Penn Iron Works, Limited, and will be officered as follows: Andrew J. Steinman, chairman; Wm. G. Mendenhall, secretary and treasurer; Wm. B. Middleton, superintendent; the chairman, the secretary, and H. W. Middleton, F. W. Yarnell, and R. H. C. Hill, managers. The mill has been standing for several years, but is in a good state of preservation and will soon be in operation. It will roll bar iron.

PITTSBURGH AND VICINITY.

Wilcox, Shinkler & Miller's Monongahela Works are being run on full time. Eighty men are employed. They are very busy and have orders booked ahead for several months. This firm has lately shipped a large gas holder to Paterson, N. J., an outfit for gas works to Denver, Colorado, and a pair of hoisting engines to Mt. Pleasant, Pa., for H. C. Frick & Co.'s coke works. Have in course of construction some large hydraulic cylinders for Boston, Mass., hydraulic main and mouth pieces for East Hampton, Mass., Clarksville, Tenn., and Utica, N. Y., steam hove hammer for Rome, Ga., flour mill machinery for Putneyville, Sligo, Connellsville, Pa., and Moundsville, W. Va., and Turbine water wheel for Merced, Cal.

Hillard & Sterret's Fort Duquesne foundry is so pressed with work that they have been compelled to increase their plant. They have just added another 14-ton crane

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of
PEN AND POCKET CUTLERY,
 Solid Steel Scissors, Shears, Razors, &c.
 Sole proprietors of the renowned full concave patent
"ELECTRIC RAZORS,"
 And the celebrated **"ELECTRIC SHEARS."** Nickel Plated
 Agents for the **BENGAL RAZORS.**
AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.
 91 Chambers and 73 Rensselaer Sts., N. Y. 423 N. Fifth St., ST. LOUIS, MO.

MERIDEN CUTLERY COMPANY.

The "PATENT IVORY" HANDLE TABLE KNIFE.

The oldest manufacturers of Table Cutlery in America. Exclusive makers of the CELLULOID HANDLE for Table Cutlery. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER and HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application. No. 49 Chambers Street, New York.

THE
LAMSON & GOODNOW
88 CHAMBERS ST.
MFG. CO.
N.Y.
AMERICAN TABLE CUTLERY &c.

AARON BURKINSHAW,
 Manufacturer of Pen and Pocket Cutlery, Pepperell, Mass.
 My Blades are forged by hand from the best Cast Steel, and warrant-
 ed. To me was awarded the Gold Medal of the Conn. State Agricultural Society.
 Office in New York with E. P. Whipple, 100 Chambers St.

HALL, ELTON & CO.,

Electro Plated Ware, German Silver and Britannia Spoons.



THE "EASTLAKE." (Patented.)

Factories, Wallingford, Conn.

Salesroom, 75 Chambers Street, New York.

EXTRA HEAVILY PLATED

Spoons, Forks, Knives, Etc.



The only survivor of the four Rogers; recognized by the Supreme Court of this State in the test trial ex. C. Parker.

WM. ROGERS, Wallingford, Conn.

Formerly of Hartford and West Meriden.

With **SIMPSON, HALL, MILLER & CO.**

STANLEY RULE AND LEVEL CO.,

MANUFACTURERS OF

Improved
Carpenters'
Tools.

FACTORIES,

New Britain, Conn.

WAREHOUSES,

29 Chambers St.,

New York.

No. 113, Improved Adjustable Circular Plane - \$4.00

NICHOLS' SELF-ACTING ACID PUMP.

Absolute Safety!
 Perfect Ease!

Time, Labor and Material saved by using the
NICHOLS ACID PUMPS,
 to draw all kinds of acids from
 carboys. Every pump war-
 ranted. Send for new circular
 and price list. Manufactured
 only by

Acid Pump & Siphon Co
New London,
Conn.



The Old Way.

The New.

FRIEDLEY'S
Egg Spoon
 MADE ONLY by the
Enterprise Mfg. Co.
GENEVA, O.
 (PAT'D. JAN. 7, 1879.)

6th. Serving fish balls, potato cakes, &c. In fact it is preferable to all other spoons for general use.

Cutlery.

ALFRED H. HILDICK,
 12 Warren St., N. Y.,
 Importer of CHAINS, ANVILS, VISES, &c.
 Agency of
HILL BROTHERS & CO., WALSALL, ENGLAND
 GENERAL HARDWARE MERCHANTS,
 And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.
 These shears are unsurpassed for cheapness, dura-
 bility and utility. They are made of one solid piece
 of steel from point to point, and cannot be broken in
 use either in the bow or at the junction of the shank
 and blade. Samples can be seen at above address, or
 sample lots furnished.

CORPORATE MARK,

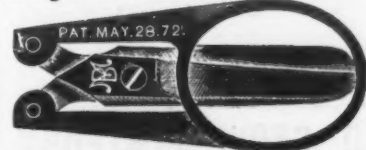


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 (LIMITED)

CELEBRATED CUTLERY,
 No. 32 Chambers Street, New York.
F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'**
 productions having considerably increased, they
 have, in order to meet it, greatly extended their
 Manufacturing Premises and Steam power.
 To distinguish Articles of **Joseph Rodgers
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 their Corporate Mark.

Young's Patent Folding Scissors.



Having largely increased our facilities for the manu-
 facture of these very popular goods, we offer them to
 the trade at a large reduction from our former
 prices. The list price of the large size is now \$12.00
 per dozen, formerly \$15.00, and the small size, \$2.00,
 formerly \$2.50. The material used in the manu-
 facture of **Young's Patent Folding Scissors** is the
 very best. All are nickel-plated and furnished with
 a neat morocco case.

MARX BROS., Proprietors,
 430 Broadway, New York.

Cutlery.

McCOY & CO.,

IMPORTERS OF

Hardware, Cutlery, &c.

SOLE AGENTS FOR

THEILE & QUACK'S

CELEBRATED

Pocket Knives and
Scissors.

A large stock of

Muzzle & Breech Loading

English Guns.

132 DUANE ST.,
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Silver Medal, 1878-Paris.



J. R. SPENCER & SON,
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MANUFACTURERS OF

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STEEL,
 Table Knives, Razors, Shovels, &c., &c.,
 of every description.

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SPENCER
SHEFFIELD
 Granted 1749.

GEORGE W. BRUCE,
 1 Platt St., New York,

Agent for CLEMENT & MAYNARD'S Trowels, Hoes,
 Shovels, Spades and Scoops. Their Trowels and Hoes
 have entirely supplanted the English by their quality
 and cheapness, while all their goods compare advan-
 tageously with those of other makers, and are largely
 exported.

Established in 1839.

A. G. COES & CO.

WORCESTER,

MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

COES

Screw

Wrenches.

PATENTED,

May 9, 1871.

December 26, 1871.

December 28, 1875

August 1, 1876.

The back strain when the wrench is used is borne
 by the bar—not by the handle.
 The strongest Wrench made, and the only suc-
 cessful Re-enforced Bar.
 None genuine unless stamped

A. G. COES & CO.,

Our Agents, **GRAHAM & HAINES**, 113 Chambers St.,
 New York, carry a full line of our goods, and will be
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ESTABLISHED 1836.

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Guns and Pocket Cutlery,

SPECIALTIES.

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ELEYS BROS.' GOODS, **WRIGHT'S ANVILS,**
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS.
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All sorts of Hardware and Merchandise for im-
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ROBERT SORBY & SONS,
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Kangaroo Sheep Shears,

The best **CORPORATE MARK** Every
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SEYMOUR'S SHEARS
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HENRY SEYMOUR CUTLERY CO.,
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Every Pair Warranted.
 Sold by Hardware Dealers throughout the country.
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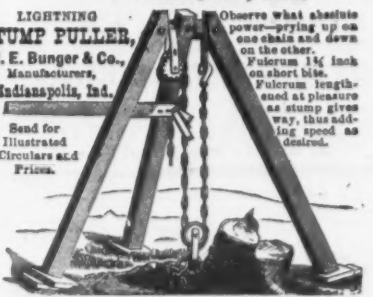
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 Velocipede Scroll Saws, No. 1, \$12.00; No. 2, \$15.00;
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 Mortising and Molding Machines, each, \$25.00. Com-
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 attachment, \$20.00; Hand Circular Saw, \$10.00; for
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We make Tills either for
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Simple, Cheap,
 Light.
 Durable, short hitch,
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Frederick's 3-Horse Equalizer is a perfect Double Tree, a perfect Tripple Tree, a perfect 2-Horse
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BRASS PAD LOCKS
 For Railroad Switches, Freight Cars, and the Hard-
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 Patent Horizontal Rim Cylinder Night Latch.
 Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob
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PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japaned.
 Catalogues and Samples sent upon application. **BROOKLYN, N. Y.**

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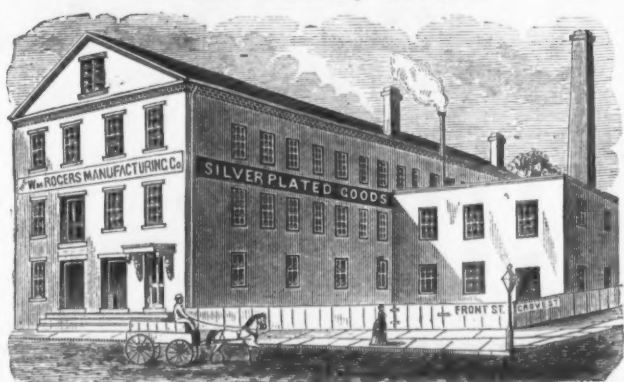
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ON SPOONS:

Wm. Rogers & Son, A.A.
Established in 1865.

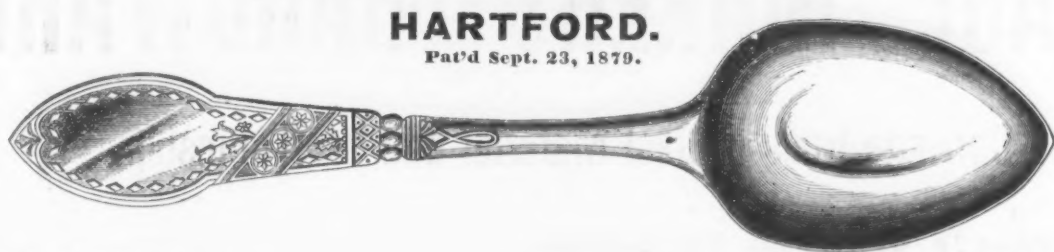
We call especial attention to
our new pattern, the

"HARTFORD,"

which is beyond question the
latest and nobbiest pattern in
market.



HARTFORD.
Pat'd Sept. 23, 1879.



WM. H. WATROUS, President.

F. WILLSON ROGERS, Secretary.



FORKS, SPOONS, Etc.,
Manufactured from Cast Steel, Plated with Nickel and Silver.

WALLACE BROTHERS, Wallingford, Conn.

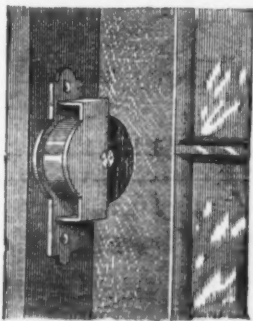
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ANTI-WINDOW

RATTLER,

FOR

Dwellings, Cars, Steamboats, &c.



The Anti-Window Rattler supplies a long needed want; it is so simple in construction that it can be used on any window, and so complete that it will prevent the slightest shaking, no matter how great the jar or how old the sash. As shown in cut, it consists of a rubber wheel in a nickel-plated or brass frame; is ornamental as well as useful, and does not interfere with raising or lowering the sash.

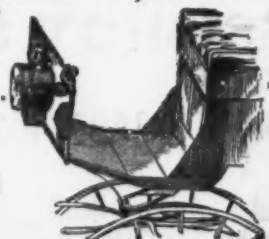
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Boudren's Patent Adjustable Dash Lamp.
REMODELED AND GREATLY IMPROVED. PRICES REDUCED.

Perfection Attained.
Flame Regulated
FROM THE
OUTSIDE.

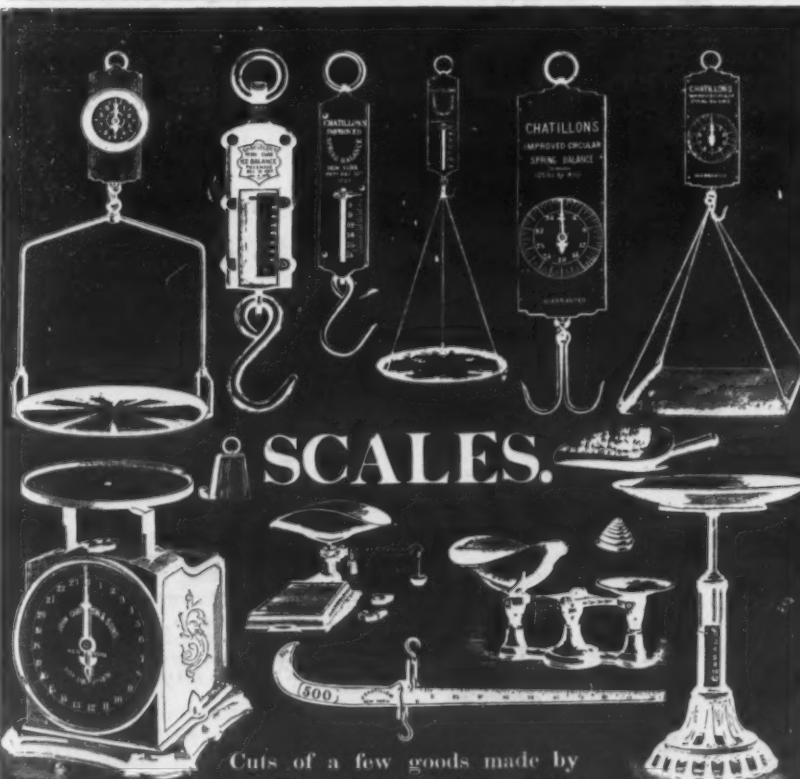


GUARANTEED
To Burn Brilliantly
OVER THE
ROUGHEST ROADS.

SPLENDID
Barn Lantern.

WHITE MANUFACTURING CO.,

Manufacturers of all kinds of
CARRIAGE AND HEARSE LAMPS AND MOUNTINGS,
BRIDGEPORT, CONN.



Cuts of a few goods made by

JOHN CHATILLON & SONS, NEW YORK, U.S.A.

Trade Mark
ON KNIVES:

WM. ROGERS & SON
HARTFORD, CONN. 12

Established in 1865.

SUPERIOR SILVER-PLATED
KNIVES,
FORKS,
SPOONS,
CASTERS,
CAKE BASKETS, &c.

and are contemplating the introduction of electric light with a view to running their heats later at night. Over 50 hands are employed.

The extensive copper and brass rolling mills of C. G. Hussey & Co. are now running extra time to enable them to meet the demand for their goods. They have recently added to their works improved appliances for nickel plating, sheet copper, brass and zinc. The product of their mill at present ranges from sheets as thin as tissue paper to those of an inch thick and of immense area. Seventy hands are on the pay roll.

The finished product of the Edgar Thompson Steel Co., Limited, for the months of August and September, 1879, was steel rails, August, 7403 tons; September, 7557 tons; total, 14,960 tons. Hammered billets, August, 335 tons; September, 344 tons; total, 679; making the total product for the two months 15,639 tons.

The Dexter Spring Co. commenced the manufacture of carriage gear, which consists of springs, axles and woodwork, in September, 1878, and this addition to their business has assumed extensive proportions. They have not been able to keep even with their orders since April last, and never has the inquiry for goods been so great as during the last 30 days.

Every mill in Allegheny city is hard at work.

The Carbon Bronze Company are employing a full force, who are working full time. An order for 2500 car bearings, for the New York Central Railroad, has just been completed. Business has increased 100 per cent. since the first of this year. Their process of refining is now being successfully applied to casting bells. The demand for carbon bronze, for journal bearings and castings required to resist severe and heavy strains, has steadily increased since its origin.

Totten & Co. are making an unusual amount of rolling machinery for all parts of the country. Their orders extend from Boston to St. Louis, and their establishment is running night and day. They have patterns for the largest squeezer made in this country. They are now building one of this size for John Roach, of Chester, Pa., and another for the Baugh Steam Forge, of Detroit, Mich. They have also five large roll trains in hand, and four large rotary squeezers under way.

The statement that the Superior mill started up week before last to make some iron rails is incorrect. The mill is rolling steel rails.

H. McKnight & Co., Eclipse Steam Pump Works, Pittsburgh, are kept going day and night on account of press of business. Thirty-five hands are employed. New machinery was added this week to increase facilities to fill orders, which are accumulating. The large pump which was on exhibition in Machinery Hall of the Exposition has been taken to fill an order.

Two heating furnaces in the beam mill of Carnegie Bros. & Co. have recently been repaired. This is hardly sufficient to warrant the report that is circulating that the entire mill was under repairs.

McNish & Butler's machine works are working full handed, on full time, about 25 men being employed. A large brick machine for Denver, Colorado, and three machines for Godfrey & Clark, paper-bag manufacturers, of this city, comprise the principal large orders, but small orders are coming in faster than they can turn them out.

James McQuinston & Co., of the Pittsburgh Galvanizing Works, were never so busy as they are now. Last June they enlarged the works to 80 x 150 feet. These are running steadily until 10 p. m. They are doubling their capacity for pickling acid and other tanks required in the process of galvanizing.

The Braddock Times has been shown, at the Edgar Thomson Steel Works, specimens of iron ore from the following places, imported for use in the company's new blast furnace, now in process of erection: 200 tons of ore from Spain, 200 from Carthage, 200 from Egypt, 200 from County Antrim, Ireland, and 200 from Pilot Knob, Mo.

The largest sheet of iron ever produced in Western Pennsylvania was lately rolled at the Union Iron Works of Carnegie Bros. & Co. The firm recently received an order for 36 sheets for a gunboat now in course of construction at the shipyard at Chester, and the one rolled that morning was the first made. The sheet is 3 inches wide, 3 inches thick and 13 feet in length, and in the rough weighed 5000 lbs. When finished, ready for shipment, it will weigh 4500 lbs. Notwithstanding the immense weight, it was manipulated with ease by only five men. The other sheets will be made as rapidly as possible.

The employees of the Keystone Flint Glass Works have been working 11 turns a week since the last week in June, only stopping one month since November, 1877.

There are now five open-hearth furnaces in Pittsburgh, besides one just commenced. The latter will be a 7-ton furnace. A year ago there were but two. At least three others will be commenced shortly.

VIRGINIA.

It is thought that there are not over 200 tons pig iron and 800 tons iron in the eastern part of the State.

The rolling mills, foundries and machine shops in Richmond are very busy and all short of pig iron.

WEST VIRGINIA.

The Huntington Commercial says: But 200 men were employed two months ago in the five iron furnaces along the line of the Chesapeake and Ohio Railroad, and now there are over 1200 employed.

The shipments of nails from Wheeling by rail are very heavy just now. The Benwood Mill shipped 22 car loads on Monday, September 29. The Riverside has on several days shipped 25 cars of nails and iron freight. The other mills are also shipping in the same proportion. A large number of orders are waiting on water in the river, particularly for points on the lower Mississippi.

The task of shoveling out the stack of the Top Mill Furnace, at Wheeling, was completed last week, and relining was commenced at once. The break begins about 10 feet from the top and extends nearly all

the way down. The present stack is about 65 feet high, and it is thought that in repairing 10 feet more will be added to it. The break is attributable to the fact that the furnace was built three or four years before it was put in blast, and the lining became somewhat injured by standing idle so long. The furnace has been working well since it was put in blast just one year ago. It is expected it will be in blast again in about six weeks.

NORTH CAROLINA.

There is no immediate prospect of starting the Buckhorn, Endor or Ore Hill Furnaces.

It is said that there is not a pound of iron on hand at any of the furnaces in this State. It has been three years since any of them were in blast. There is not much prospect of their starting up again this year, though the advance in iron may cause some to start up before 12 months.

OHIO.

The Ohio furnace, in the Hanging Rock region, whose present blast commenced on the 26th of May, expects to blow until the middle of February next, basing her operation on about 2000 loads of charcoal, over 700 of which she receives from Kentucky. She is now making a daily average (stopping Sundays) of 17½ tons of strictly foundry iron on about 125 bushels of coal and 2 4-10 tons of ore per ton of iron. The iron is hauled from the furnace to Union Landing, on the Ohio River, a distance of 3¼ miles, over a train road laid this spring with 18 lb. T rail, whereby the expense of teaming is reduced from 2 men and 6 mules to 1 man and 3 mules, over last year when the road was laid with a wooden track.—Greenup (Ky.) Independent.

The Aetna furnace, at Ironton, is going to run next year.

The two stacks of the Cleveland Rolling Mills, Newburgh Furnace, at Cleveland, yield about 60 tons a day.

The Lake Erie Iron Co., Cleveland, are full of work. Their 10-ton steam hammer in the forge is making axles, shafts, &c. Their rolling mill has all it can do. In the mill two 18, one 9 and one 8-inch bar mills are working, besides the muck mill. Capacity of the company, about 60 tons a day.

The La Belle Glass Co., of Bridgeport, are about to commence the erection of a 13-foot gas furnace which, when completed, will require additional workmen, but until it is finished the company will make no addition to their present force.

Swift's iron and steel works, Cincinnati, are running plate, fire-bed, sheet, muck and rail trains double turn, and their furnace on American Scotch Irons. They are shipping 175 tons rolled iron and rails and about 50 tons pig iron daily. The Globe Rolling mill, Licking Iron Co., Mitchell, Tranter & Co., and the Anchor mills are all running for the greater part double turn, and are all busy. Messrs. Peter Zinn and Thomas Carothers, with John Evans as manager, have bought the old Paducah (Ky.) rolling mill, and as soon as the Ohio River will permit, will move it to Riverside, a small suburb of Cincinnati, on the river, and the O. & M. R. R. and the I. C. & L. R. R., immediately west of the city. They are building there a sheet, bar, guide and muck mill, which are expected to begin operations some time next January.

The following items from the Jackson region are from the Greenup (Ky.) Independent: Fulton and Tropic, two of the eight Jackson County stone coal furnaces, are running. The former is making on raw coal and 40 per cent. ore, with a 13-foot bosh, close to 20 tons daily. Comparatively, this is as good work as any Ohio furnace has ever done. It must be remembered that outside of this neighborhood the bituminous furnaces use a large percentage of foreign ores and mill cinder in their mixtures, which contributes largely to yield. The Tropic has been in blast several weeks, making mill iron exclusively and not working quite up to the anticipation and desire of her owners. The Huron Furnace is being repaired, and will be put in blast toward winter. The mine is being pumped out and ore is being received. The Star Furnace, after several years of idleness, is showing signs of life and activity, and will make pig iron next year. The stack is to be enlarged, and other improvements looking to an increased production made. Furnacemen generally feel that 10-ton furnaces will not do any more. The Wellston Company is putting one of its stacks in order, but, having no stock and the ore season nearly over, will not make iron before late next spring. The Milton Furnace is out after a three-months' run. She stopped in May for a new hearth and went in in June. Scaffold run after starting, and, though long labored with, had to be blown out. New m-wall and hearth are being put in. The stop will cover a month. The Eliza is out. The Orange and Globe furnaces will probably never be repaired, so poorly and temporarily were they constructed, and so thoroughly have they gone to destruction. The charcoal furnaces of the county are all running, and are generally short of ore. Prices during the early part of the season were not encouraging enough to induce furnacemen to take ore freely, and now they find difficulty in getting their orders filled at increased prices. Cash is being paid for labor and material instead of "store goods," and yet one or two furnaces will probably make shorter blasts than anticipated, on account of the scarcity of ore, or rather men to dig it. There are few stocks of iron in this section. The piles that have laid for years waiting are gone. The furnaces in blast ship as soon as the metal is cool enough to handle.

The report that there are hands at the 150 works, at Zanesville, who do not get 75 cents per day, and boys who are paid only \$2 per week is false in every particular. There are a number of men employed in the plow works of the Brown Manufacturing Co., of Zanesville, who before they went to work for that company were carrying on business for themselves. They left their own shops and commenced to work for the Brown Company, because the wages paid them by the company profited them more at the end of the year and the employment was steady. The Brown Company work now about 120 hands, and among that number is quite a sprinkling of boys; yet the average clear through is \$1.25 per day. Arms, Bell & Co., Youngstown, have

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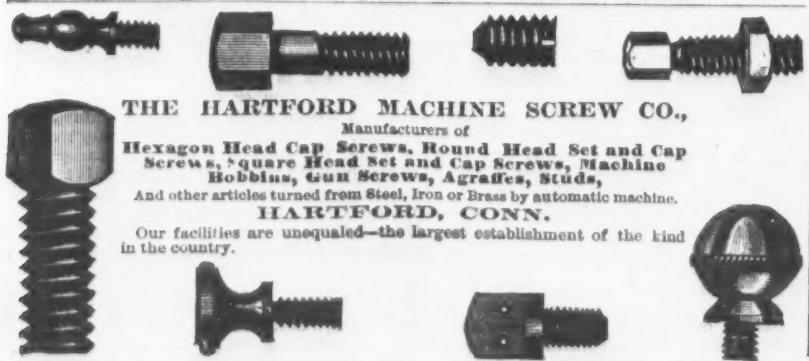
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and replaced without trouble at a
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This Nipper gives greater cutting power than any
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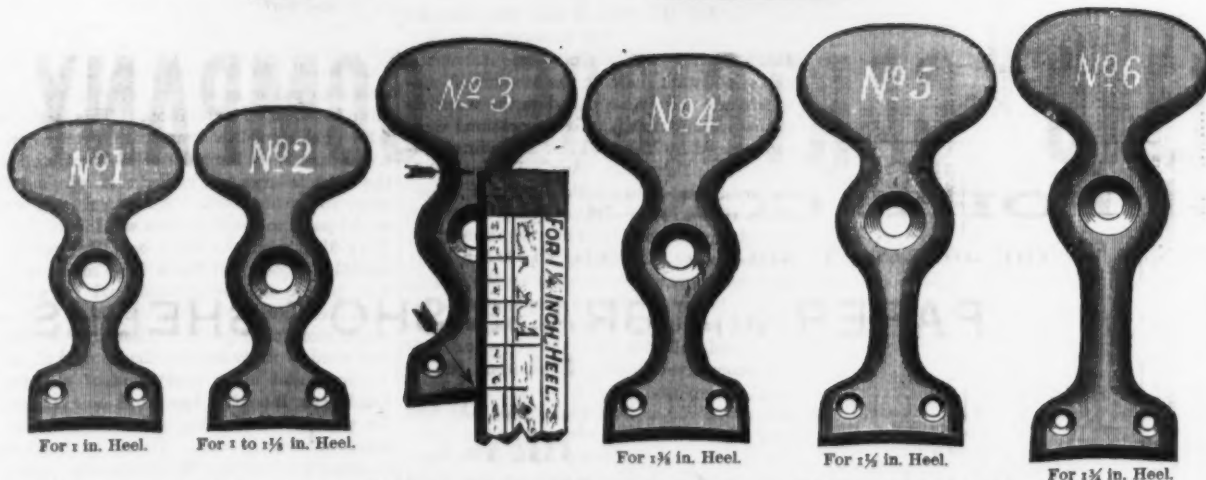
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orders ahead for about 30 days on nuts and washers, and probably 60 days on Bolts. There is an item going the rounds of the press which says they have orders one year ahead. It is untrue.

L. Jeff. Sprengle, of Ashland, has recently patented a neat and simple device for holding bags while they are being filled. The bag is held open at the mouth by a metal strip, elliptical in shape, and provided with adjustable slideways, which enable it to be adapted to a bag of any ordinary size, and projecting prongs to hold the bag in position. The metal strip is furnished with a hook which fits into screw-eyes, these being elevated or lowered until the bag is supported at the proper height. It is claimed for this bag holder that it does away with the service of one man, while it performs its office much better. If the upright which holds the metal belt be secured to a platform on wheels, the holder can be moved with ease, and acts in the additional capacity of a truck. The device seems well suited to the purpose for which it is intended.

The Niles Tool Works, Hamilton, have sold Mr. Van den Kerchove, Gand, Belgium, a boring and turning machine of large capacity, weighing about 10 tons. These machines have features of excellence peculiar to these builders and secured by letters patent. In addition to this sale they have also contracted with a firm in Nottingham, England, for a similar machine.

Simpson & Gault, makers of the "Peerless," "Favorite" and "Unique" clothes wringers, made a fine display at the Cincinnati Exposition, just closed, and also at the St. Louis Exposition, through the Simonds Hardware Co. This firm is doing a large business in this country and also in Europe and Australia. They have offices in New York, London and Paris. The "Peerless" wringer (wooden frame) have the lead in the sales of this company, the "Favorite" being a special style for trade requiring an extra finished and higher priced wringer. The "Unique" wringer is an iron frame friction wringer, designed to supply that class of customers requiring a low priced wringer. This firm supply all kinds of new process mill machinery.

MISSOURI.

Messrs. Chase, Hawley & Munson, ax and edge tool manufacturers, at Grand Rapids, are running their works to their full capacity, with large orders awaiting fulfillment. They have made axes one of their specialties, and last year turned out over 30,000. In the early part of this year they suspended the manufacture of axes on account of the low prices, but are now manufacturing them at a rapid rate. They are also manufacturing planer and stove jointer knives on a large scale. They turned out of their works in the first six months of this year, 3000 sets of cultivator irons and corn planter runners for a firm in Iowa, besides plow coulters and other agricultural irons.

MISSOURI.

Over 40 hands are at work on the excavation for the new smelter of the Lone Elm Company, at Lone Elm, and nearly as many more on the addition to the White Lead Works. This company is paying very liberal wages, from \$1.50 to \$2 per day being the ruling price.

Great exertions are being made to increase the production of iron ore, and with some success. Next year's product will, perhaps, be increased 200,000 tons. However, there will be no surplus over demands.

The Maramac Furnace, at Maramac Iron Works, will probably never be blown in again. This is a cold-blast water-power furnace. The ore bed belonging to it is nearly exhausted, and charcoal, because of distance of timber, more expensive than it should be to run successfully. The property is owned by the heirs of Thos. James.

Messrs. Dixon & Co., the owners of a newly discovered bed of clay, at Jonesboro are producing and placing on the market a brick which has thus far satisfied every test. Heretofore the rolling mills have been dependent on Scioto Valley for their superior fire-brick.

ILLINOIS.

The Joliet Iron and Steel Co. carry from 4000 to 6000 tons of pig iron in their mill yard. Their steel rail product for September this year was 7050 gross tons.

The Laclede Rolling Mill, St. Louis, has been entirely renovated, making it practically a new mill. The six ordinary coal heating furnaces formerly used have been taken out and replaced by four Siemens and one Swindell heating furnaces. The company has erected twelve Siemens gas producers and put in a new slide valve engine and a new Porter-Allen engine. In addition to this the company has put in a plate train, two rolls high, 96 inches by 26 inches. According to a correspondent of the *Bulletin*, the capacity of the mill will now be 100 tons of finished iron per day.

The St. Louis Stamping Company is erecting a small rolling mill in which to produce iron for its own exclusive use. The mill will be furnished with six pair rolls, two Siemens and four Swindell heating furnaces, two double Swindell puddling furnaces, and four charcoal knobbling fires. The mill is expected to be ready for operation by December 1.

INDIANA.

The Greencastle Iron and Nail Co., at Greencastle, are running full.

KENTUCKY.

The Greenup Charcoal furnace is averaging 12 tons of No. 1 foundry iron.

The only charcoal furnaces that have been in blast in the State since 1874 are the Bellefonte, Hunnewell, Pennsylvania, Mount Savago and Charlotte. All the iron that is not sold ahead for delivery is what is held by the Bellefonte and Hunnewell. These furnaces cannot increase their production to any considerable extent. The others are all out of repair, and have been for so long that it is very doubtful whether they will be re-erected even under the stimulus that now exists.

WISCONSIN.

The Richland Iron Company's furnace, at Milwaukee, has been pulled down and business stopped permanently.

The Northwestern Iron Company are preparing to blow in their furnace at Mayville. None of the blast furnaces in the State

have any iron on hand. It is almost impossible to find a carload.

KANSAS.

It is said that miners are in demand in the coal fields near Port Scott, Kansas.

GEORGIA.

It is reported that a change has taken place in the superintendency of the rolling mill at Atlanta. Joseph Downing has retired from that position, and has been succeeded by D. A. McNabb. The mill is running full, with good prospects.

MISSISSIPPI.

The Vicksburg *Herald* says that business in that city was never on a more solid foundation than it is to-day.

OREGON.

The Oswego Furnace, in charge of Ernst W. Crighton as manager, and Sam Fowler as founder, is doing better than ever before. Both these men were reared and learned their trade in the Hanging Rock Region. The furnace is making 13 tons per day, and has now completely run the Scotch pig iron out of the Oregon markets—Greenup (Ky.) Independent.

LABOR AND WAGES.

Work is improving at all the mines in the Nelsonville, Ohio, valley. The miners got the 10 cents advance on the 1st of this month without any trouble, making now 60 cents per ton.

The strike at Richmond, Mo., continues. The miners have been out five months, and their advertisements are keeping all regular miners away.

The miners at Tunnel Hill, Pa., mountain top are once more demanding an increase of wages. At the mines of Denniston, Porter & Co. they demanded an increase of six cents on the ton. They were idle but one day, when their demands were acceded to. The miners of the Tunnel Hill mine have made no move for an advance as yet. They were, in the past, governed by Houtzdale rules, but what they may do in the future is not known. All the mines hereabouts are running steady.

It is said that the Menifne, Ky., coal miners have struck for one cent per bushel advance.

In Chess, Smythe & Co.'s nail mill, the wages of the employees of the forge and nail departments not affected by the sliding scale, will be increased to what they were on Dec. 23, 1876.

The boys employed on the night turn at the hoop rolls in the Solar Iron Works of William Clark & Co., Pittsburgh, went out on a strike on Monday, the 29th ult. They had been working for some months at night exclusively, and the strike was inaugurated so that they would be allowed to work on the day-turn every other week. These boys have always claimed to prefer the night turn, and, so far as Messrs. Clark & Co. know, no demand has been made to change with the day turn. Their places were promptly filled, and they are now anxious to return to work.

The puddlers at the Palo Alto Rolling Mill, at Pottsville, resumed work on the 29th ult. at the same terms at which they quit. When the present contract for rails is completed, they will receive an advance of wages proportionate to the increased price for rails.

The wages of the day hands at the Keystone Rolling Mill, Pittsburgh, were advanced on Monday, the 29th ult., from 10 to 15 per cent. The advance was not voluntary, but was the result of a demand by the men.

The men at Moorhead's blast furnace, Pittsburgh, made a demand on the firm for an increase in their wages, and on Saturday, September 27, they were informed that they would receive an addition of 10 per cent. to their wages.

The molders in the employ of Torrance, Merriam & Co., of Green Island, N. Y., resumed work, having secured the price they asked—a 10 per cent. advance. The firm have made an advance in price from one-half to one cent per pound, which is generally accepted kindly by their customers. At this establishment there is at present a greater press of orders than has been experienced for the past three years. The South Foundry is running to its fullest capacity on malleable-iron castings, and the North Foundry is equally busy on a superior quality of small gray-iron castings. These works have not stopped for want of work for over 15 years.

A voluntary advance of 10 per cent. in the wages of the molders at the Judd Mfg. Co., at Wallingford, Conn., has been made.

The coming convention of the Brotherhood of Locomotive Engineers, to be held in Kansas City October 15, promises to be one of unusual interest and importance to the future weal of the organization. Several important questions are to be brought before the body, among others that of changing the plan of their Insurance Association, making it compulsory that each member of the brotherhood should be insured.

Rick Bros., hardware manufacturers, at Reading, Pa., voluntarily, on October 1, advanced the wages of their men 10 per cent. on account of improvement in business.

The molders in the stove foundries at Quincy, Ill., recently demanded an increase of 10 per cent. in wages, claiming that such an advance had been made in St. Louis. The proprietors refuse to accede to their demand until satisfied that such an increase had taken place. On the 3d inst., by order of the Molder's Union, all hands in the different foundries struck.

It was stated that the molders of Todd & Jones, Philadelphia, have had an increase of 10 per cent., and they have a promise of an additional raise in about two weeks.

The molders of Heighman's Foundry, in Reading, Pa., have received 20 per cent. additional.

Ricks & Co., of Reading, Pa., have granted an advance of 15 per cent. to their molders.

In a recent issue of the *Chemiker Zeitung*, Herr Krüger recommends the following as a good method of protection of iron against rust: He dissolves 10 parts of pure caustic soda in 500 parts, by weight, of water, adds 5 parts of yellow beeswax, and, after stirring, allows to cool. The resulting solution must be applied to the articles to be protected in a heated condition.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, October 16, 1879.

DAVID WILLIAMS - Publisher and Proprietor.
JAMES C. BAYLES - Editor.
JOHN S. KING - Business Manager.

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BRITISH AGENCY.
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The United States Board of Trade has published an able paper, by Mr. J. A. Price, Treasurer of the Scranton, Pa., Stove Works, "On a National Department of Commerce and Industry." This is the best argument in favor of such an addition to the machinery of the National Government that we have seen. There is, however, much to be said on the other side. The information needed could be collected, compiled and published, by extending the operations of the Bureau of Statistics, more cheaply than by creating a new department, and with less danger of creating a branch of the government which would have every inducement to favor and promote centralization, and to urge upon Congress the usurpation of extra-constitutional powers. Still, we are impressed with the force of Mr. Price's argument in favor of more and better statistical information than the government now furnishes, and are heartily in sympathy with some, at least, of the objects sought by those who favor the establishment of a new cabinet officer with the portfolio of Commerce and Industry.

Worrying About the Advance in Iron.

Those who, like Mr. Hendee, of Milwaukee, whose letter we print in another column, are troubled about the recent rocket flight of iron, and find therein the menace of a descent not unlike that which marks the earthward course of the rocket-stick, would do quite as well not to worry about it. Conceding that all their fears are well founded, the fact remains that they cannot do anything about it, and no one is likely to be influenced by them to refrain from availing of an opportunity for profitable speculation in iron, or from anticipating immediate requirements as a consumer on a rising and excited market. We have no doubt that there is danger of reaction as the result of a too rapid advance in prices; but all great movements are set in motion by great forces, and in seasons of activity and excitement, warnings and protests are like cries drowned by the roar of a whirlwind. After all, we have a great deal of confidence in the aggregate wisdom of the business community, and the position of the iron market is still so strong that predictions of collapse are, to say the least, premature. Pig iron is perhaps likely to attain a point higher than that at which it can be firmly maintained; but the elements of strength which surround the position of manufactured iron give a reasonable assurance of stability of values for a long time to come. The rolling mill capacity of the country is relatively less, in proportion to its consumptive requirements, than the furnace capacity. But, however this may be, the forces which have impelled iron steadily upward are irresistible, and it is probable that they will continue so until, in their own good time, consumers who now want iron and are more eager to buy than makers are to sell, conclude that they have enough, and makers begin to look for the orders they are now compelled to refuse. We see no present occasion for anxiety, and while it is possible that the "boom" may be carried too far, we do not see that we can prevent it. Those who think they can—or at least that they should do what they can in this direction—may console themselves with the reflection that they are not likely to be embarrassed by the loss of reputation as prophets, whatever the turn of events. If all goes well for years, people will have forgotten the doubts they expressed. If the alleged bubble should collapse, the prophets will enjoy the delight of saying "I told you so," or at least of thinking how much better it would have been had their advice been followed. That there is no probability of its being headed, accounts in some degree, perhaps, for the confidence with which it is given.

The British Free Trade Missionaries.

It is evident that in the opinion of British manufacturers and prominent free traders, a favorable time has arrived for an effort to effect such changes in the United States tariff as shall be favorable to the interests of British producers. Concerning the three missionaries lately selected to labor for our enlightenment on this subject, a well informed correspondent in England writes us as follows:

At last week's meeting of the Sheffield Chamber of Commerce, a "private" communication was read on the subject of trade between this country and the United States. I noticed the brief newspaper report of the meeting, and presuming that the subjects discussed were really confidential, lost interest in the matter and let it pass. A day or two later, however, I found a contributor to one of the local papers had paid no attention to the privacy enjoined upon its reporters, and had let the cat out of the bag in this wise: "Our Chamber of Commerce is desirous of availing itself of the aid which the knowledge of some of our able men of business can afford at Washington. . . . Mr. William Harrison, Mr. Howson and Mr. George Fisher will sail on Saturday for the United States. The voyage is not undertaken for business purposes, but as it had been communicated to our Chamber of Commerce that questions affecting our trade are likely to occupy the American government in view of the next session of Congress, these gentlemen are requested by the council to present themselves, in its name, to Sir E. Thornton, and give him such information affecting our trade as he may require or as they think he may find useful." I don't pretend to understand all the mysterious intricacies of this Delphic announcement, but I gather, broadly, that the three gentlemen go to aid in a renewed attack upon our tariff. I do not know who is meant by Mr. "William" Harrison, unless it be an electro-plate manufacturer of that name, who is a prominent trader, but has not, to my knowledge, any special knowledge of your trade. If Mr. "James William" Harrison be meant, I can quite see the point, although I fail to see how the house of Harrison Bros. & Co. can spare two of its partners from home at one and the same time. Mr. Fisher is a steel and file manufacturer, who knows the Sheffield and American trades well, but I never heard him accused of being guilty of anything intimately connected with the *suaviter in modo*. Messrs. Harrison & Howson are, of course, fully competent to speak authoritatively of the cutlery business with you.

If the errand of these gentlemen is with Sir Edward Thornton, it is a private matter which does not in any considerable degree concern the American public. It is not probable, however, that such is the fact, as any information needed by that gentleman could be as well and more easily forwarded by mail. If, as we suspect, it is an important part of their mission to dine out and make speeches, and be entertained by chambers of commerce and boards of trade, with a view to impressing our people with the advantage of sacrificing their own interests to promote those of British manufacturers, we hope some of the clever Americans with whom they come in contact will have the courage and the patriotism to tell

them the plain truth, much as it was told to M. Leon Chotteau in San Francisco and certain other points visited by him. We fail to see how any American can regard such a missionary effort as other than a gratuitous impertinence, whatever his views on the subject of protection. American legislation on economic questions has been, and should always be, prompted by a desire to promote the best interests of the American people. Foreign interference should be resisted in this as in any other matter of domestic policy. As gentlemen visiting the United States, Messrs. Harrison, Howson and Fisher merit, and will undoubtedly receive, every courtesy and consideration; but in their official capacity as agents of the British free-trade propaganda, they invite a snubbing which we heartily hope they will receive.

The Population of the Earth.

The increase or decrease of population has such an important bearing on the prosperity of nations, their moral and material advancement, their trade and industry, and finally their military power, that statistics relating thereto are at the present day carefully gathered by political economists and studied by statesmen, by commanders of armies, by bankers, merchants and manufacturers alike.

Comparing present statistics of population with those of a century ago, it is evident that the longevity of the human race has increased. The reports of the death rate which we possess support that conclusion, and it is pretty well established that the ravages of epidemic diseases are not so general nor so fatal as they were a century ago. Medical science has made enormous strides in mastering the disorders of the human system and in warding off and checking maladies which threaten human life. Even within the last generation the death rate has declined considerably in England, and there, as well as in this country, public hygiene has received great attention, and the difficulties arising in connection with it are being steadily overcome. Modern improvements and a more rational physical education have contributed to bring this about.

The following table, the figures of which we have gathered from late European statistics, shows the gradual increase of population in Europe, notwithstanding a large emigration to America and the East, and gigantic wars:

INCREASE OF POPULATION IN EUROPE—IN THOUSANDS.		COUNTRIES.	
1800.	1870.	1800.	1870.
15,000	21,000	Spain	11,000
15,000	21,000	Portugal	3,000
15,000	21,000	France	37,000
15,000	21,000	Germany	37,000
15,000	21,000	Italy	17,000
15,000	21,000	Sweden	2,000
15,000	21,000	Norway	1,000
15,000	21,000	Denmark	1,000
15,000	21,000	Belgium	4,000
15,000	21,000	Netherlands	4,000
15,000	21,000	Switzerland	2,000
15,000	21,000	Austria	11,000
15,000	21,000	Prussia	18,000
15,000	21,000	Russia	48,000
15,000	21,000	Poland	10,000
15,000	21,000	Hungary	10,000
15,000	21,000	Croatia	2,000
15,000	21,000	Serbia	1,000
15,000	21,000	Romania	1,000
15,000	21,000	Greece	1,000
15,000	21,000	Turkey	15,000
15,000	21,000	Total	210,000

* No reliable census till 1871.

The present population of the world is estimated as follows:

	Square miles.	Population.	Density per sq. m.
Europe	3,776,493	300,178,300	80
Asia	17,070,388	884,548,500	52
Africa	11,417,894	199,921,500	17 1/2
Australia & Polynesia	3,381,210	4,748,600	1 1/2
America	15,687,840	85,519,800	5 1/2
Total	51,343,825	1,493,916,800	28

European Turkey, after deducting the tributary states, counts a population of but 3,500,000; but on adding those states as well as its possessions in Asia and Africa, the Ottoman empire embraces a population of 47,660,000, 20,500,000 of whom are in Europe, and 13,000,000 in Asia. Adding to European Russia its immense possessions in Asia, the empire counts a population of 86,500,000, occupying a territory of 8,500,000 square miles. British India, including the tributary and vassal states, has a population of 239,000,000. China has a population of 405,000,000, of whom but 28,500,000 are within the tributary states. Japan has now a population of 33,500,000. Egypt, without counting the disputed territories, numbers 17,000,000. The newly founded Suez Canal cities are rapidly increasing in population; thus Ismailia has 4000, and Port Said 10,000. Algeria has 2,448,000 inhabitants; the Cape Colony and dependencies count 1,338,000.

The United States are set down in these European tables with a population of but 39,000,000, although 47,000,000 would be nearer the truth. Canada is put down as counting but 3,672,000, which is nearly three quarters of a million short of the actual number; and Newfoundland counts 161,000,

Mexico has 9,276,000 inhabitants, and the Central American States 2,823,000. The West Indies count 4,316,000 souls, and South America has a population of 21,309,000, Brazil alone claiming 11,000,000.

The Australian continent, without adjacent islands, has a population of 1,860,000. New Zealand is the most thinly populated, counting but 421,000 inhabitants. In the Fiji Islands the native population decreases, and now amounts to but 70,000, while the whites are rapidly increasing, now counting 3000. The largest cities are the following: London, 3,500,000; Paris, 1,851,000; Vienna, 1,191,000; New York, without Brooklyn, 1,060,000; Berlin, 1,044,000; Canton, 1,000,000; Seanton, 1,000,000; Shanghai, 1,000,000; and Singanfoo, 1,000,000.

Reaching Bolivia Through the Tributaries of the Amazon River.

Quite recently the newspapers noticed the return from Brazil of a company of laborers who have been engaged in an attempt to establish commercial communication with Bolivia, direct from the Atlantic seaboard, by means of what is known as the Madeira and Mamore Railroad. The parties thus concerned, headed by Colonel Church, of New York, as president, represented the Bolivia Navigation Company, who obtained an exclusive right to the navigation of certain rivers, together with important concessions, from the government of Brazil, and a loan of something like \$3,500,000, secured in England on Bolivian credit. For a time the enterprise looked hopeful, but the English bondholders threw the whole matter into Chancery in an effort to recover possession of the funds, which still remain on deposit in the Bank of England. The result was that on April 24, 1879, Justice Fey, of the High Chancery Court, gave a sweeping decision in favor of surrendering the funds to the Navigation Company for the construction of the proposed road. A month later this decision was reversed upon an appeal of the bondholders to a full bench. This had the effect of throwing out the American contractors, at once bringing the whole movement to a disastrous end, except as the British Parliament may interfere in their behalf. The Navigation Company claimed the right to appeal to the House of Lords, which may have an opportunity to consider the case at the short session between the end of November and Christmas, or later, at the session in March, 1880.

The enterprise, as it stands, looks forlorn enough, but the Colonel and his associates are not in despair. The vice-president, Mr. Jas. S. Mackey, of this city, has furnished us various data showing the amount of materials and money expended on the work up to the present time. Active operations were commenced by Messrs. P. & T. Collins, contractors, in December, 1877, when materials and men were sent to the Amazon River. From time to time eight cargoes were furnished, and, according to the estimates of Mr. Mackey after examining the books, fully \$300,000 in value went out from the United States, to say nothing of money spent for freight, provisions and wages. The materials comprised rails, fish plates, engines and boilers, locomotives, houses for laborers, &c. In brief, as we are informed, every provision was made for a first-class road. At one time there were 1000 laborers on the work. The loss of the steamship *Metropolis*, with a considerable number of men, en route from Philadelphia to the Amazon, will be remembered. Aside from this and the steamers *Mercedita* and *Richmond*, all the vessels chartered were sailing vessels.

In regard to the future, the officers of the Bolivia Navigation Company express surprise at the apathy manifested by citizens of the United States. The London *Telegraph* comments on the matter as follows:

Without giving an opinion on the merits of the question, there is no impropriety in saying that a litigant who can point to two decisions in his favor in different courts for one against him, has *prima facie* a reasonable ground for inviting the final judgment of the highest tribunal in the kingdom, and the customary facilities should not be refused him. But if, in addition to depositing an enormous sum in hard cash as security for costs, he is to be further-travelled by conditions of an unprecedented character, the only result would be to strengthen the opinion in the United States, which has already been expressed by the Philadelphia *Times*, namely, "to create profound distrust in the safety of American business interests before English courts when they are controlled by English aims or prejudices." In other words, it is thought that harder measure is dealt out to an American than to an Englishman.

The fact appears to be that the original English contractors broke down in their engagements, and when Americans took their places the favor previously bestowed by English bondholders was withdrawn. Coincident with the change of circumstances, the latter sought to withdraw their capital also, bringing the whole enterprise to a disastrous termination, unless the British Parliament overrules the courts, as referred to above. The situation is unfortunate, as thwarting an enterprise which promised a magnificent commercial development through the tributaries of the Amazon.

It will be remembered that a firm of American contractors, Messrs. Morris & Cumings, of New York, secured an important contract for the dredging of a ship canal, some ten miles in length, through a broad lagoon between Cronstadt and St. Petersburg. They commenced operations

with the breaking up of the ice last spring, but weather of unusual severity has prevailed, and we hear that the apparatus prepared by the engineers was lately driven ashore and greatly damaged. What effect this may have in retarding the work is not stated.

Show Windows.

One good effect of the Centennial and the many State and local exhibitions since held, and which have been generally well patronized by enterprising manufacturers and business men, should have been, and probably has been, to teach the retail tradesman the methods and benefits of judicious display. To exhibit once or twice a year at some show of more or less importance is desirable enough, but greater and more lasting benefits will result from making one's own store a perpetual exhibition, which challenges the notice of every passer-by and leaves something impressed upon the memory. This is a subject on which a few suggestions, after careful observations in this and other cities, may be of interest to a very large and important class of our readers in the retail trade.

Several objects are to be attained in placing goods in windows where people may see them. Foremost among these is to attract the attention of the public not only to the goods, but to the store. People must become familiar with the place of business; and secondly, they must be attracted to it. They must also be made acquainted with the kind of goods one has for sale, and for this purpose these goods must be placed where they can be seen.

With these objects in view there are several things which must receive attention in order that the desired results may be obtained. First and foremost we would say, keep the window-glass clean. If the panes are of plate glass they will more than repay all the time and trouble which it will take to make them spotless. Even in the country, where smaller lights of glass are used, there is no excuse for fly specks or dust upon the window. If you wish your goods to attract attention, look to the glass. We urge this strongly, because in the country small retail dealers are prone to neglect their windows, thinking they have nothing to show, and allow the dust to become so thick on the glass that goods piled in the window disappear from the public eye as though a gunny-bag curtain had been hung in front of them. After having made the window clean, we come to the question of what shall be placed in it and how the goods shall be arranged.

What shall be placed in a window is a very important question, and should be well considered. In the first place, do not attempt to put a sample of everything you have in stock on exhibition. This is a rule which holds good in every case, even where a comparatively limited stock is kept, and if the stock is large and varied this rule is still more to be observed. As an example we might point to a well-known window in New York filled with the most beautiful and interesting goods, yet there is so much in it that people are bewildered and go away with a confused idea that they have seen a whole storeful of goods. There are in that one window more articles than would fill ten windows and make every one of the ten handsomer than the one as it now stands. To produce a pleasing effect, the window must not be crowded. There must not be so many goods as to confuse the eye. All of the prettiest goods should not be in the window at one time, but rather a selection, for a show window must be kept attractive and the goods frequently changed. If the window is to be filled with shelf goods and all the best looking are displayed at once, there will be no chance for change until a new stock comes in.

How to arrange the goods in a show window is the most important question. A great deal depends upon the class of goods to be shown, especially in the matter of backgrounds upon which things are to be placed. It may be taken as a pretty safe rule that there are very few goods which can be placed in a window upon a sheet of white paper and make a good appearance without any assistance. A stove alone in a window is a very ugly object, no matter how much nickel it may have; but place a bright stove-board under it and hang a Turkey-red curtain behind it, putting goods in small and bright-colored packages in the window to give brilliancy, and a very good effect may be obtained. A screen covered with handsome paper may be made to form a background for the stove, and make it show off in a way that is quite surprising to one who has never seen it done before. This brings us to the principle that if your goods are not in themselves pretty or bright in color, they can be made to appear to good advantage by the use of a good background. Carpenters' bit-stocks are not very handsome, even when the handles are of lignumvite, but when they are neatly arranged upon a board covered with black velvet, with smaller tools disposed along the edges and in the corners, the effect is quite brilliant.

Black velvet shows dust very quickly, and to be presentable it must be carefully dusted every day. Shelf goods in general show very well upon red. Many stores in this city use red flannel, but this holds the dust so firmly that it can hardly be kept clean. Turkey red is better for many things, and in some cases plain red paper may be used to good advantage. Creton, if well selected,

will show off goods nicely and keep clean for a long time.

In putting very small goods in a window, a great many of one kind may be sometimes used by arranging them in regular patterns. They can thus be made to form good backgrounds for larger objects which are to form the leading feature of the show. Sometimes people attempt to do something in this way and make an utter failure. An example of this kind may be seen in a very large window not far from this office, where the whole exhibit consists of a broad walnut board, upon which, in regular order, are tacked perhaps two dozen large bronze hinges. Bronze and black walnut do not form a pleasing contrast of color; there is no leading object in the window, and nothing to please nor attract the eye. The whole work in arranging them has been worse than wasted. We know a great number of such displays, which are bad in themselves, and seem to grow worse and worse, because they have been kept in the windows for years. No matter what the kind of goods to be displayed, if they are nothing but kegs of nails, a pretty window may be made of them by using bright colors, with neat arrangements, and making changes often enough to keep up the interest.

This brings us to another important point. After a window has been prettily arranged the shopkeeper must not think that his work is ended. People soon begin to tire of a window, no matter how nicely it may be arranged; and the storekeeper, on his side, if he has any taste, still has other goods which he wishes the public to see. In Boston, Monday is usually set apart for dressing windows. The old goods are taken down and a new arrangement substituted. When this is done people get into the habit of stopping to examine the goods in the window. They know that changes are to be made at short, and perhaps regular, intervals, and they like to take notice of them. To put new goods in a window every week or two, taking out the old ones and making an entirely new display, is, we know, somewhat of a task; but if people wish to succeed in business, they must not fear making those necessary preparations without which it is impossible for any retail business to be really prosperous. In these days, when people are becoming educated to appreciate beautiful things, the surest and quickest way to appeal to them is through the eye, and the tradesman should take advantage of it. We have seen plumbers, who certainly have as little as any class of tradesmen wherewith to make a showy display, by tasteful arrangement make their goods attractive.

The tradesman should not be afraid to incur a little expense now and then in making his show windows inviting. If the expenditures are made judiciously they will prove a good investment. Success in this line cannot be attained at once, but by keeping his head clear and his eyes open, the shopkeeper can make his store a conspicuous feature of the street, whether it be Broadway, New York, or the main street of some village too small to appear in a county map.

Misdirected Letters.

A good deal of unnecessary anxiety has been caused in business circles during the past fortnight by unwarranted newspaper statements concerning a recent order of the Postmaster General, to the effect that letters with incomplete or wrong addresses should be sent to the Dead Letter Office, without any attempt on the part of officers or clerks to forward them to their destination. It has been stated that letters would be thus detained if the county, as well as the town and State, was not given in the address. In point of fact, no such thing was ordered or contemplated. The instructions of the Postmaster General are to the effect that when letters are not addressed to a post office, or by the omission of the State or other imperfection in the addressing their proper destination cannot be determined, they shall be sent to the Dead Letter Office. This is entirely proper. Suppose, for example, a letter is mailed in New York addressed to John Smith, Middletown. There is at least one Middletown in every State which has a post office, and under the old system it would be sent wandering around from one Middletown to another, at great expense of time and trouble. The Postmaster General is quite right in directing that the Department shall not be burdened with the responsibility of making good these omissions. The carelessness often displayed in addressing business letters is simply amazing. We have seen bushels of letters thrown out at one assorting in the New York Post Office, some sealed without any address, some half addressed, and many bearing the names of localities such as "Toad Hill," or "Snake Hollow," which have no post offices and are not, properly, geographical designations, except in local colloquial usage. We know of one letter, containing a check for \$35,000, which was mailed without either stamp or address. A wagon-load of day would scarcely exceed the amount of matter reaching the New York Post Office which can only be forwarded by guess, if at all. If people want their letters to go to those for whom they are intended, the least they can do is to address them correctly. The addition of the county facilitates distribution and dispatch, but it is not made the condition of forwarding. All the department wants or expects is that letters

shall be addressed to some post office in some particular State. If this is not done, letter-writers have no reason to complain if their letters miscarry.

As we expected, the attempted monopoly by the Pacific Railroad Companies of freights destined for the Pacific coast, has proved a signal failure. It will be remembered that a large proportion of the merchants in California and neighboring States were induced to sign contracts pledging themselves to ship exclusively by rail, under the penalty of forfeiting the rebate. We learn that a considerable number of the contracts have expired and are not renewed, the railroad companies seeming to regard the whole scheme as profitless. Trade, consequently, is now left to take its natural course, either by rail or by water, without dictation from any quarter. The clipper ships are receiving their usual share of business—five being now on the berth in New York and two in Philadelphia—but all in the trade complain of dullness. Rates by rail are about the same as in months past, and there is no great difference in the amount of freight going round the Horn. The railroad companies are credited with making only moderate charges—on some descriptions of freight scarcely more than one-third of what they might exact, if disposed. This is true of clothing and other goods liable to suffer from mildew on shipboard, or to go "out of style" from delay. It is believed, however, that moderation is considered the best policy, at least until trade is well established by the overland route. Shippers of all sorts are looking for increased volumes of freight as soon as it is possible for the mills to execute orders already in hand.

Telegraphic advices from London under the date of October 13th, are to the effect that there is a brisk demand for iron, and that prices for future delivery show an advance of from five to ten shillings per ton. In addition to an American demand there is a revival of exports to the Continent, which is perhaps the most encouraging sign yet noted. The indications favor the belief that the British iron trade is entering upon an era of substantial revival. No doubt the makers are apprehensive, and in England, as here, recovery may make two or three false starts before it gets fairly under way; but an advance, even if followed by reaction, is indicative of an awakening, and contains the promise of substantial improvement in the near future.

Reports are current in circles most likely to be correctly informed, that certain Russian naval officers will be in New York next month, and, as surmised, with reference to proposals for shipbuilding. In the absence of any definite information, even from gentlemen lately in Europe who had opportunities for learning as much as anybody, the rumors referred to excite more than usual inquiry.

The Cincinnati Industrial Exhibition closed a very successful season, with a full attendance on Saturday night. Between 11,000 and 12,000 visitors witnessed the closing scene. The total attendance during the time it has been open foots up 422,893, and the receipts about \$100,000. On Saturday at 6 p. m. the commissioners held their meeting, rendering the last of the awards to exhibitors, and at 7 o'clock the exhibition closed. We regret that for want of space we are obliged to hold over till next week an interesting report, from a special correspondent, on the ores, fuel, pig-iron and manufactures of iron and steel shown at this exhibition.

The American Institute Fair.

The time that has passed since our last notice has wrought a considerable change in the appearance of the American Institute Fair. The empty spaces have been filled, the workmen have gone, the boxes have disappeared, the machinery has been set in motion—in a word, the fair may now be said to be at its height. The absence of novelties, which has been already noted, becomes even more apparent now that everything is in its place, and is especially noticeable in the machinery exhibit. Besides the exhibits which we have already described, we find the usual complement of pumps and steam engines. Among the latter exhibits we notice those of the Ames Iron Works; Robert Whitehill, Newburgh, N. Y., a horizontal engine provided with an Allen governor; Shapley & Wells, Binghamton, Conn., and W. G. & G. Greenfield, Harrison, N. J., vertical engines; the Buckeye Engine Co., Salem, Ohio, a horizontal engine; the Porter Manufacturing Co., one of their six horse-power "Economizer" engines; J. C. Todd, Paterson, N. J., the Baxter portable engine, and F. C. & A. E. Rowland, New Haven, Conn., their vertical engines. Most of these engines are probably so well known to our readers as to require no description. Among the principal exhibitors of pumps are Cammeyer & Sayer, New York, who show the Rider compression pump; Jos. C. Todd, who exhibits his "Acme" steam pump, and Charles B. Hardick, Brooklyn, N. Y., who exhibits his Niagara direct-acting steam pumps.

Wm. L. Gregg, Philadelphia, has on exhibition a triple brick-making machine, together with several models of brick machinery, and samples of plain and fancy brick manufactured with his machines. The "Otto" silent gas engine, manufactured by Schleicher, Schumm & Co., of Philadelphia, has been described in these columns and therefore requires but passing mention. It attracts as much attention as some of its noisier neighbors.

Newell's patent universal grinder is exhibited by Newell & Chapin, of this city. The grinding disks of this machine are made

of hard iron or steel, with beveled edges, locked together upon a shaft, composing a cylinder with a series of angular indentures, upon the sides of which are radial cutters or teeth. Another shaft with duplicate disks is so placed that the projections on one cylinder fit into the spaces between the projections on the other. This grinder is claimed to be adapted to a great variety of purposes, from the pulverization of quartz to the grinding of planing shavings for packing purposes, and the grinding of dye woods, tobacco, old cloth, flax seed and many other materials.

A. Campbell, New York, has keyed one of his dynamometer pulleys to one of the lines of shafting. Alongside of the pulley is a stationary plate carried by the shaft, to which a graduated scale is attached to show the number of pounds strain on the belt. It is also provided with a dial which records the total of the actual work done.

The Malleable Nickel Alloy Co., New York, exhibit a number of articles made of a new alloy of nickel which, they claim, is both malleable and ductile. The composition is not given. The Portable Bellows Forge Co. have on exhibition three sizes of their portable forges. Emery wheels and emery wheel machinery are represented by the exhibit of the Union Stone Co. Various sizes of Einhauser's watchman's time detectors are exhibited.

The sewing machine exhibits take up a considerable portion of the aisle on the north side of the main hall. Among the exhibitors we notice the following firms: Wheeler & Wilson, the Singer Mfg. Co., E. Remington & Sons, Johnson, Clark & Co., the Universal Buttonhole Attachment Co., Warner & Bros., and the National Buttonhole Machine Co.

The Berlin & Jones Envelope Company, of this city, exhibit one of their self-gunning and folding envelope machines, which attracts considerable attention.

A very interesting exhibit is made by Mr. F. D. Curtiss, for many years a manager of the American Institute. He contributes a loom built over 150 years ago, with a spinning wheel and flax breaker, and a few samples of articles woven on a similar machine. The loom is built entirely of wood—oak for the most part—and many manufacturers in this age of shoddy might derive a useful lesson from this solid structure, worn smooth by long usage, but seemingly as capable of turning out its rough, honest, homespun goods to-day as it was a century and a half ago.

John H. Green, New York, exhibits a safety clothes-line hanger, designed to allow the hanging of clothes on a pulley line without the necessity of leaning out of the window. It is a simple contrivance, and apparently well suited to the purpose for which it is intended.

The Martin automatic parlor elevator is rather an ingenious contrivance for carrying passengers or light merchandise from floor to floor. It is so constructed as to be readily operated by hand with a minimum expenditure of power. This is accomplished as follows: The elevator is counter-weighted sufficiently to make an allowance for the weight of the operator and the maximum weight of merchandise likely to be raised. In this way the actual power expended is merely that necessary to overcome friction. If the weight of operator and merchandise happens to be less than that of the counterweight, an extra weight is added to the elevator. A friction clutch is so arranged that the elevator cannot be either raised or lowered except when the operator has his foot upon a lever connected with the clutch. When the weight to be raised is heavier than the counterweight, extra purchase is obtained by throwing into gear a system of toothed wheels. This machine occupies a space of 2½ feet square.

The Boston Belting Co. make a considerable display of articles of vulcanized india rubber for mechanical and manufacturing purposes, including steam packing, engine hose and belting. Leather belting is represented by the exhibit of J. B. Hoyt & Co., of this city.

Peter A. Frasse & Co., New York, have a case containing a full assortment of machinists' tools, jewelers' tools, lathe chucks and matting tools.

The Gilbert & Bennett Mfg. Co., Georgetown, Conn., and the American Wire Works, of this city, display quite a variety of wire goods. The former exhibit includes family, grocers' and cheese safes, window shade cloth, sieves, galvanized twist wire, wire netting and galvanized wire conductor strainers designed to keep leaders free from leaves and other things which are liable to fill them up; while the latter comprehends a patent iron rim, adjustable bottom molder's riddle, sieves, rat traps, flower stands, wire railing and window guards.

We may briefly notice the exhibits of the Howe Scale Co., who display a number of their scales, coffee and spice mills; Marvin's Safe & Scale Co.; the New York Shovel Works; Elliott & E. Cunningham, Worcester, Mass., who has an automatic saw set for hand saws; Jas. T. Pratt, New York, who makes a good display of carpenter's tools, jig saws, &c.; Oakley & Keating, New York, who exhibit laundry machinery; Wm. Hassall, a case of brass and iron wire nails and escutcheon pins; the Fire Extinguisher Mfg. Co.; and C. H. Delamater, of this city, who exhibits D. L. Kennedy's shearing and punching machines, which he manufactures.

The Fuller Electrical Co., New York, have in operation a Fuller's magneto-electric machine, which furnishes the current for an electric light in the hall.

John Matthews, of this city, exhibits soda water apparatus, including an improved vertical generator for evolving carbonic acid gas, provided with a Matthew's duplex gasometer, and a displacement pump for pumping water against pressure.

T. F. Rowland, Brooklyn, N. Y., have on exhibition a number of Duc's improved elevator buckets. These include ordinary mill buckets for use in flour mills, breweries, &c.; heavy ore buckets for use in heavy work, for copper ore, coal, iron, broken stone, &c.; and store-house buckets for use in grain elevators and for excavating purposes. These three kinds of buckets are manufactured in various sizes. They are made of charcoal stamping iron. Bauer &

Co., New York, exhibit their "steeline," a compound for tempering steel tools.

The following are some of the firms exhibiting agricultural machinery: The Walter A. Wood Mowing and Reaping Machine Co., two of their mowing and reaping machines; the Ames Plow Co., Boston, Mass., some of their patent chilled Centennial swivel plows provided with wheel and movable cutter; Nash & Bro., New York, their "Acme" clot crusher, leveler and pulverizer; J. P. Lafetra, Shrewsbury, N. J., a patent road plane for planing and leveling roadways, &c.; and W. King Evans, a revolving seed planter.

Henry Reese, Baltimore, Md., exhibits some wrought iron railroad cross-ties. The points of his invention on which he lays especial stress are, the use of springs to keep the parts together and prevent rattle; the plan of reversing the alternate ties end for end, so as to bring the permanent lugs alternately on opposite sides of the rail base; and an upturned toe on the lower inner end of the movable clamp, which, in addition to its use as a fastening, serves to prevent the rails from being tampered with.

Two systems of noiseless rails for elevated railroads are exhibited. John R. Harrington's patented compound muffling contrivance for deadening sounds on elevated railroads, consists of a fibrous packing interposed between the base of the rails and ties on which the rails rest, and also between the tops of the flange of the rail and wooden caps which protect the packing from the weather. The muffler is made of a cheap fibrous material composed of woolen fiber, cotton, jute or flax tow and sawdust, the compound being mixed in a raw or semipulpy state, as may be required. The second contrivance shown is patented by Louis Leybold, of this city. A dovetailed groove is made in the rail and filled with pasteboard, rubber, leather, lead or soft steel wire. Moore, Jenkins & Co. make a display of some of their hardware specialties.

The Danger of a Too Rapid Advance in Iron.

MILWAUKEE, Oct. 10, 1879.

To the Editor of The Iron Age: History fully sustains the fact that, because of the immensity of the iron industries, not only of this country, but of the whole world—it being the greatest interest and trade, and leading all other trades—when iron moves briskly everything else follows in due proportion, and when iron is depressed the reverse is the case. No trade is subject to so many fluctuations, so many depressions, so many inflations, is so unreliable, so unstable, as this mammoth, almost incomprehensible, leading commercial interest, as is proven by the unduly and almost unreasonably over-excited state of the markets, as we find them to-day. The depression that has characterized the trade for a few years past, brought about by various causes—inflation one of the principal ones, overproduction of the time being, and other things—compelled us to get back to a basis; no matter how much it cost, or who it crushed, it had to come, and come it did; and it proved a season that tried men's souls as well as pockets. During all this time we had a class of iron men who, to tide over for the time being, were constantly lowering the prices of their manufactures far below actual cost of production, not only going to ruin themselves, but actually dragging the whole trade after them, until men of supposed wealth were hopelessly drawn into the whirlpool, and came out on the other side of the bankrupt law and its benefits. Even those who survived failed to see the folly of cutting prices on their products, for fear of being supplanted, and sent out their agents to see how very cheap, and how much they could undersell their neighbors, no matter about the cost of production. Things went on in this way until one day a specie basis was declared in this country, and in just 15 seconds (it is history and no one can go back on that, no matter what may be his political views), business began to run itself, and it has actually pushed and crowded out these low-priced traveling iron agents; they have all been called home, and you can scarcely find one on the road; if you do, they are the first to sound the alarm; are loudest in shouting high prices to the already crazed lunatics of the same stripe, and to this class of men is due much of this unpleasant confusion in which we find ourselves to-day.

Lately, the very careful, prudent, hand-to-mouth policy, was so closely adhered to by everybody that no large bills were bought by anyone. Not even railroad corporations saw that it would require much iron, spikes, &c., to build branches and extensions, and to repair their old worn out roads. They seemed to think these mills could continue to roll out their productions for all future time at a figure far below actual cost of manufacture. If any of the more courageous ones ventured to suggest the propriety of getting a little more for their wares, they would have a thousand lower offers from others thrust into their blushing faces; and so it went on, no happy if they could sell; price no consideration; a sale was the height of their ambition.

One day, not long ago, it so happened that everybody wanted more spikes, more iron, and more nails; railroad men wanted more rails than anyone had or could furnish, as dealers had no large stock of goods in store, and then those low-priced men got right home and began to publish through all the live journals of the land what desolation and scarcity of goods prevailed. They advanced prices for what they had on hand and induced journals to predict balloon prices for the future, and have actually got the trade so demoralized, and made so many dealers lunatics, that the asylums of the land to-day would not hold them.

In the meantime Europe has had an eye to business, and is sending and will send the pig iron that she has piled up, which has been begging for the market so long. Then manufactured goods will be coming into the country for the next year. This, with our furnaces put in blast, many of them so long idle, will cool the fevered brows of this over-excited class of iron sensationalists, who are always going to one extreme or the other. Iron should have advanced to a healthy figure, so as to afford a fair margin to the producers and trade generally; that is all right and proper. But to go up in

price in six weeks to where it should have taken one year of legitimate, healthy trade to have brought it, is too much of a luxury for those who have large contracts at low figures; and it creates altogether too much confusion for comfort to the trade at large, while breeding future trouble by unduly exciting the European market with the idea that America must look to them for future supplies of pig and other irons. Better go slow, keep cool as we can, and take in these storm signals of undue and uncalled-for alarm; get all our finances at work, and all other facilities of home production in operation, and then say to Europe, "thanks for this favor of helping us tide over, and we are prepared to reciprocate, and what will you have in our line?" This matter will tone down in time, and will, no doubt, leave the prices higher and more healthy and satisfactory, and, it is hoped, at a figure that will protect our own industries and be remunerative to all concerned.

Respectfully, C. A. HENDREE.

Henry C. Carey.

With great regret we announce the death, at his home at Philadelphia, of the venerable Henry C. Carey, who has long enjoyed the honorable distinction of recognition as the father of American protection. Henry Charles Carey was the eldest son of Matthew Carey, a bookseller and publisher of Philadelphia. At the age of twenty-one Henry C. Carey became partner in his father's business. The firm was afterward, under the style of Carey, Lea & Carey, the largest and most successful publishing house of its day. In 1836 Henry C. Carey retired from business, and it is from about this time that he became known to the outside world as a political and philosophical writer, and it is as a maker, rather than a seller of books, that he will long be remembered.

In 1835 Mr. Carey published his "Essay on the Rates of Wages," which was subsequently expanded and reproduced in 1840, under the title of "Principles of Political Economy." This was his *chef d'oeuvre*, and by it he is best known, as it has been translated into several languages, and forms a text book in many European schools. In this work Mr. Carey gives a new expression to the generally accepted measure of value, as consisting, not in the labor expended in the production of anything, but in the labor required to reproduce at the time. The value of existing capital is continually falling with the advantages of association and of improved machinery. Labor is, therefore, continually growing in its power to command capital, and the combined action of the two is continually producing a larger return for the same outlay, of which return an increasing proportion goes to the laborer, while the return to the capitalist, though in smaller proportion, is increased in absolute amount. Thus profit and wages do not vary inversely, but high wages are an evidence of prosperity and of the increase of capital; the interest of labor and capital are not antagonistic, but harmonious, and the physical, social and political progress of all classes is concurrent.

In 1848 Mr. Carey published his "Past, Present and Future," in which he attacked the essential grounds of Ricardo's hypothesis of the "decreasing fertility of the soil." In this work he maintains, by an elaborate historical investigation, that men, instead of settling first upon the best soils, have always and of necessity begun upon the poorest, the light, sandy soils of the uplands, which are easily tilled by the rudest tools, and that with the improvement of machinery and the increased powers of association they have proceeded gradually to the cultivation of more fertile and more difficult regions, the heavy bottom lands, covered with timber. In all existing communities, as well as in the records of history, it is found that the lowest in population and wealth are those in which the inferior soils alone are cultivated, and the degree to which they have subdued the better lands marks their progress upward.

Of Mr. Carey's numerous subordinate writings, of which the "Credit System," published in 1838, and "The Slave Trade" (1850), are the most important, there is not space to speak; nor is it possible to touch at this time upon the discussion which his works have evoked. Suffice it to say that many of the laws which he first formulated are no longer disputed, and that to a greater or less degree he has influenced the political economy of every civilized country.

Until within a few years Mr. Carey was a voluminous and acceptable contributor to *The Iron Age*, but for some time before his death the increasing infirmities of age compelled him to discontinue literary work. He attained the age of 86 years, retaining his intellectual power, with an unusual measure of physical strength, to the last. Personally, Mr. Carey was one of the most delightful of gentlemen, and to have enjoyed the hospitalities of his most interesting home, adorned with choice works of art by painters of the last generation, and listen to his wise and witty conversation, was a pleasure we shall always remember.

A correspondent of the *Frankfurter Zeitung* says: "The addition of four steamers to the Hamburg-American fleet is a practical declaration of war against the freight line protected by a new association of Hamburg capitalists to compete for business with the United States and the West Indies, an enterprise for which two new steamers are already ordered. These four steamers, running direct to New York, can deliver goods in twelve days, while the exclusively freight boats of the new company will require sixteen days. There is a prospect of severe competition, and it is said that, in order to counteract the Hamburg-American Company's prompt action, the new company propose to commence running this autumn with chartered English vessels, as their own cannot be completed before next year."

Dr. Braumüller, an Austrian mining engineer, states that in the subterranean waters of the "Fortschritt" coal mine, in the Dux district, Bohemia, regular tides have been observed for the last six months. The Berlin and the Vienna Academies of Science are devoting much attention to this phenomenon.

Special Notices.

PARK BENJAMIN'S
SCIENTIFIC EXPERT
OFFICE,37 Park Row, New York.
CONSULTING ENGINEERS AND EXPERTS.

New inventions examined, tested and reported upon as to efficiency and value for investors. Examinations made into novelty of new devices. Validity of patents investigated. Expert evidence in all branches of science in law suits.

Machinery designed. Mechanical engravings prepared.

Rolling Mill for Sale.

The Real Estate, Machinery, Fixtures and Tools of the PORTLAND ROLLING MILLS will be sold at public auction, without reserve, to the highest bidder, at the mills.

TUESDAY, September 30, 1879,

At 3 o'clock P. M.

The property of the company consists of 69 acres of land on tidewater, in the town of Cape Elizabeth, Cumberland County, within ten minutes' drive of the city of Portland. Besides the mill buildings the company owns 55 tenements in 25 buildings, one hall used for church purposes, two stores and a thoroughly well fitted office, with fire-proof vault and all modern improvements. All the buildings are in good repair.

The mill contains one 10-inch train, and one 18-inch train, with all the machinery appertaining to the manufacture of rails and bar iron. Its capacity is 14,000 tons of iron rails or 6,000 tons of merchant iron per year.

The property is provided with a thoroughly built wharf, at which vessels of 300 tons capacity can lie at low water, and is directly connected by rail with all the railroads centering at Portland.

The mill is now in active operation, but possession will be given about the 15th of October, 1879.

PHILIP HENRY BROWN, President.

Portland, Maine.

Special Notice.

Hardware Manufacturers'
Exchange,

43 Chambers Street, New York.

The undersigned desires to inform all Manufacturers of Hardware throughout the United States that he has fitted up rooms, centrally located, well lighted, &c., running through from Chambers to Reade street, for the exhibition of manufactured goods in all lines of hardware. Any manufacturer can at a small annual cost exhibit his wares to actual buyers throughout the year, and all visitors can examine them free.

The advantages to both manufacturers and buyers are too apparent to need any explanation. For further particulars and application for space address

W. G. FULTON, Manager.

EXPERIMENTAL
MACHINERY

Developed and Perfected.

Special attention given to requirements of

HARDWARE MANUFACTURERS.

Address for information and terms,

RICHARDS & DOLE, Springfield, Mass.

WE QUOTE FOR
Steel or Iron Rails, Steel Tires,
Axles, Forgings, Bars, Plates,
Nail Sheets Billets,

and all Steel goods f. o. b. any British port, or c. i. f. any United States port. Thirty years' experience in the Steel Trade.

NIXON BROTHERS,

Newcastle-on-Tyne, ENGLAND.

WANTED—By a young man who has traveled as representative of two leading wholesale Hardware establishments in Montreal for 7 years, through all parts of the Dominion of Canada, and possesses a thorough knowledge of both the country and merchants, a situation as traveler for a mercantile or manufacturing firm desirous of pushing their business in the Dominion. Will be open for an engagement on or before the 1st of January next. Unexceptionable references.

Address, BOX 85, Post Office, Montreal, Canada.

FOR SALE.

The gear, steam engine and other miscellaneous patterns formerly used by the late Woodruff Iron Works of Hartford, Ct.

Will be sold cheap.

Apply to

E. F. SMITH,

Hartford, Conn.

A New Ax Factory For Sale at Half Cost.

Built with all modern improvements and at panic prices in 1878. Building, machinery and fixtures complete, in first class order, ready to start; capacity about 150,000 axes or tools per day. Both steam and water communication with coal mines, New York and the West. Coal landed in bins from canal without cartage. Location in great iron manufacturing center. Address

J. H. PARSONS,

Provident Life Insurance Co.,

Western Union Building, New York.

I WANT TO, BY THE SPRING sooner, invest one or two thousand dollars in the foundry or iron business. Am a practical mechanic and draughtsman of large business tact and experience; 35 years of age, and would like to engage with some good concern in view of becoming a partner. At reference. State all particulars. Address

W. A. PITT,

Care G. K. Sistare's Sons, Bankers,

17 Nassau street, New York.

FOR SALE OR TO RENT—The valuable property known as Mount Penn (charcoal furnace), including 120 acres good farming land, situated about 3 miles from Reading and 1 mile to W. N. R. R. Ore convenient and well in abundance, having ample facilities for shipping product to market. The above furnace having the reputation of making one of the best irons in the market when in blast. Address, GEO. SALTER,

Reading, Pa.

WANTED.

A Good Hardware Store.

Address, with particulars and terms,

J. H.,

Lock Box 34, Lebanon, Pa.

FOR SALE OR RENT—The best of the best of 100 and 200 acres of ore and limestone; land can be sold or leased at a reasonable price; land

Address, E. DALLEY HEMPHILL,

Lock Box 26, Allentown, Pa.

Special Notices.

EXECUTORS' SALE OF AN
Anthracite Blast Furnace.

The subscribers, executors of the last will and testament of Peter Uhler, late of the Borough of Easton, Pa., deceased, will sell at public sale, at the Circle, in said Borough, on

THURSDAY, October 16, 1879,

At 10 o'clock P. M.,

all that certain Anthracite Blast Furnace, located in the Borough of Glendon, about two miles from Easton. The tract of land contains about 15 acres, and lies between the Lehigh Canal and Lehigh River, just below the Chain Dam, adjoining Glendon Iron Company's furnaces. The furnace erected thereon is a sheet iron casing stack, 14½ feet high by 70 feet high, with closed top; 1 P. Morris & Co.'s low pressure condensing engine, 8 boilers, 2 Kent's hot-blast ovens, casting house, engine house, steam hoist, &c. Also 11 good tenement houses, large store, two stables and a blacksmith shop. The furnace buildings are of brick and stone and put up in the best manner, with all the modern improvements. The works were built in 1871, and are in good order and nearly ready to blow in. Stock can be supplied by boats on Lehigh and Morris Canals or Lehigh Valley Railroad. Hematite ores can be delivered to the furnace for \$2.65 per ton and limestone for 30 cents per ton. The terms and conditions will be made known on day of sale by

S. L. UHLER,

E. L. HUNT,

Sale positive to close up the estate. Executors.

DON'T BUY

MACHINERY

Of any kind

UNTIL YOU WRITE TO US

for our List No. 30, containing full description, with prices, of over 3000 New and Second-Hand Machines, such as

MACHINE TOOLS,

BLACKSMITH TOOLS,

WOODWORKING MACHINERY,

STATIONARY AND HORIZONTAL

ENGINES AND BOILERS,

PORTABLE ENGINES,

HOISTING ENGINES,

CAR MACHINERY,

WATER WHEELS,

COTTON AND

WOOLEN MACHINERY,

SAWS,

STEAM PUMPS, &c., &c.

We offer the largest collection ever in the hands

of ONE FIRM before, and at

PRICES FAR BELOW THEIR TRUE VALUE.

Enclose stamp and state fully just what Machine or Machines you are in want of. Address

S. C. FORSAITH & CO.,

MACHINISTS,

AND GENERAL MACHINE DEALERS,

MANCHESTER, N. H.

Hardware Patterns for Sale.

Embracing a full line of Hat and Coat Hooks, Pullies, Grindstone Patterns, Curmbuckles, Bolts, Well Wheels, Thumb Latches, Casters, Brackets, Drawer Pulls, Sash Fasteners, Sash Lifts, Shutter Bars, Cupboard Catches, Latches and Turns, Flush Bolts, Store Door Hinges, &c. These patterns are all in complete order, ready for immediate use, and cover the entire line of general Hardware lately manufactured by us. Also the Hardware patterns and patents purchased from the J. & J. Manufacturing Company a short time since. We have wood cuts and price lists of the various articles. Having leased our works for a series of years, we offer these patterns in the whole or in part, at low rates on easy terms of payment. Under the terms of our lease they can only be sold for use west of the Allegheny Mountains. For terms and further information apply to

KEYSTONE HARDWARE MFG. CO.,

Reading, Pa.

FOR SALE.

Stove and Hardware stock, fixtures and business

in one of the best towns on the Hudson River.

From \$4000 to \$5000 required. Satisfactory reasons for selling. A rare chance.

Address,

HARDWARE,

Box 50,

Office of The Iron Age, 83 Reade St., New York.

FOR SALE—A complete establishment for

the manufacture of Bolts and Nuts. A com-

modious brick building covered with slate. A large

lot of ground with railroad track. A good steam

engine and boiler. Counter-shafting, belts,

punches, bolt cutters, lathes, radial drills, taps,

dies and everything in complete order for business. Will be sold at a bargain. Address

S. CAPELLE, or ALLEN GAWTHROP, Wilmington, Del.

FOR SALE.

First-Class Retail Hardware Store

On one of the principal streets. About \$2000.

New stock. Address,

J. G. BRENNER, SON & CO.,

21 N. Fifth St., Philadelphia.

FOR SALE OR TO LEASE.

A valuable Iron Mining Property, near Dover,

Morris County, New Jersey, on very favorable

terms. For particulars address

E. L.,

Care Post Office Box 4004,

New York City.

Wholesale Cutlery.

A favorable opportunity is offered to an active

man, with a capital of at least \$25,000, to take the

place of a retiring partner in a leading Cutlery

business in one of the principal Western cities. For particulars address

H. W.,

P. O. Box 65, New York.

WANTED.

Employment here or elsewhere, in any useful

capacity, by a man of ability and approved character, experienced in manufacturing and mercantile

business, is a capable office and business manager, cashier, accountant, correspondent and

indoor salesman. Has been connected with the

Iron and Hardware trade. Satisfactory reference. Address,

EMPLOYMENT,

Office of The Iron Age, 83 Reade St., New York.

Special Notices.

Second-Hand & New Tools
FOR SALE.

October List.

The Tools in the following list are all of Wood, Light & Co.'s make, have been used, but are all in good order and will be sold very low:

Five Engine Lathes, 15 in. swing 6 ft. bed.
Five Engine Lathes, 20 in. swing 7½ ft. bed.
Five Engine Lathes, 21 in. swing 8 ft. bed.
One Engine Lathe, 21 in. swing 6 ft. bed.
One Engine Lathe, 24 in. swing 12 ft. bed.
Two Upright Drills, 22 in. swing, not geared.
One Upright Drill, 22 in. swing, not geared.
Two Planers, 32 in. x 30 in. x 8 ft.
One Planer, 37 in. x 37 in. x 10 ft.
One Planer, 72 in. x 36 in. x 24 ft.
One Shaping Machine, 12 in. stroke.
Four Bolt Cutters, various sizes.
One Horizontal Boring Lathe.

The following are all new tools to be sold very low, and are all Wood, Light & Co.'s make:

One Shaping Machine, 14 in. stroke.
Seven No. 2 Bolt Cutters.
One No. 1 Bolt Cutter, with centers.
Five No. 2 Bolt Cutters, with centers.

Also the following miscellaneous Tools:

One Portable Engine, 6 in. cylinder.
One "Fond" Index Milling Machine.
Two Chase Patent Pipe Cutting Machines.
Two Engine Lathes, 15 in. swing, 6 ft. bed. One Engine Lathe, 15 in. swing, 6 ft. bed. Three Engine Lathes, 20 in. swing, 8 ft. bed. Six Turning Lathes, 14 in. swing, 4½ ft. bed. Three 4-spindle Drills. One Gear Cutter. One new "Hardway" Bolt Heading Machine, head up to ½ in. bolts. One new "Hardway" Bolt Heading Machine to head up to ½ in. bolts. A lot of Saw Tables and Wood Working Machinery.

Please specify which of the above tools you want

and we will forward all particulars.

A Woodruff & Beach

Beam Engine,

Low pressure, 42-inch cylinder, 84 inch stroke,

with fly-wheel pulley 20 feet diameter, 36 inch face, and

Four Tubular Boilers,

60 inches in diameter, 20 feet long, and all connections

practically as good as new.

For sale by

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade St.,

NEW YORK.

FOR SALE.

A valuable property in the State of Wisconsin, free from all incumbrances, embracing an inexhaustible deposit of Iron Ore and about 500 acres of land, one half of which is covered with a heavy growth of large oaks and other hardwood timber. The ore is rich and free from even a trace of phosphorus. The facilities are unusually favorable for the manufacture of a superior quality of charcoal iron, and as cheap, if not cheaper, than can be manufactured elsewhere in the United States.

It is on the line of one of the leading railroads

of the State, and is accessible to all Mississippi

ports and the lakes.

The veins or mines are to a certain extent developed, and had been successfully worked for some

time.

The greater part of the land would be well

fitted for farming purposes, as the ground is very

fertile, and the price asked for it will not exceed

that asked for common farming land. Property

in New York City or vicinity will be taken in exchange.

For information apply to or address the proprietor,

JULIUS W. HAAS,

Dubuque, Iowa.

Or EDWARD MULLER,

Care Bismark & Co.,

P. O. Box 135, Newark, N. J.

FOR SALE OR LEASE.

A MANUFACTURING ESTABLISHMENT

IN SCRANTON, PA.

On corner of two main streets, only one-quarter

mile on level road from two railway stations. Size

of lot 50 by 130 feet; main building, 30 by 100 feet;

engine, 35-horse power. Buildings and machinery

first-class and nearly new.

Underlaid and surrounded with coal, the cost of

fuel for steam is merely nominal. Best forge

coal \$1.50 per ton. With complete lines of shaft-

ing, &c., the premises can be easily and cheaply

adapted to any light manufacturing business.

Former proprietor, after successfully manufacturing

Axes and Edge Tools in the vicinity for 30

years, designed and built this shop at an expense

of \$20,000 for the continuance of the business, but

failed during the late depression.

Having neither time nor ability to run these

works, I will sell very low on easy terms.

Address,

AMBROSE MULLEY,

Providence, Lackawanna County, Pa.

For Sale,

THE ROUGH AND READY HOT BLAST

CHARCOAL FURNACE

situated in one of the healthiest regions of Tennessee,

with all its modern improvements, including a 30

horse-power engine, and two 40 feet boilers. The furnace is in close proximity to inex-

haustible supplies of rich brown hematite ore and limestone, and the rail and river shipping

facilities are excellent. Iron can be manufactured for not exceeding \$18.00 per ton, and put

into blast without much expense for repairs. Included in the property are 9000 acres of fine tim-

ber land, (including 1500 acres which are improved and under cultivation) Saw and grist mill with a

12 horse-power engine fuel boiler, Carpenter and Blacksmith shops, Stables and Crib, Coal Engine, Cider, Casting, Tool, Store and Ware, and about

70 dwelling houses. It is the wish of the undersigned to sell only the whole of this property, which can be bought on reasonable and liberal

terms. For further particulars

Address

D. THEOBALD, Youngstown, Ohio.

A. GUCKENHEIMER & BRO.

93 First Avenue, Pittsburgh, Pa.

A THOROUGH SALESMAN, with many years' experience on the road, and a good acquaintance with the Hardware Trade both East and West, is open for an engagement. Could invest, if desired, a few thousand dollars in a sure and good thing where the man is needed more than the money. Speaks German. Please address

"FRITZ,"

Office of The Iron Age, 83 Reade St., New York.

Sanderson Bros. Steel Co.

A limited number of shares for sale by

EDWARD FRITH & SON,

241 Pearl street, New York.

Special Notices.

SECOND-HAND
Machinists' Tools.

One Engine Lathe, 36 in. x 18 ft., bk. geared, screw cutting, &c.

One " " 26 in. x 13 ft., very heavy.

One " " 20 in. x 7 ft., Johnson's.

Three " " 20 in. x 8½ ft., Wood, Light & Co.

One " " 19 in. x 7 ft.

Two " " 18 in. x 8½ ft., Wood, Light & Co.

Two " " 18 in. x 7 ft., N. Y. & Eg. Co.

One " " 18 in. x 6 ft.

Two " " 15 in. x 7 ft.

Three " " 15 in. x 6 ft.

One " " 16 in. x 4 ft., Stroud.

One " " 16 in. x 10 ft., not screw cutting.

Two Hand Lathes, 18 in. x 4½ ft.

One " " 15 in. x 5 ft., Pratt & Whitney Co.

One " " 13 in. x 5 ft.

Six " " 11 in. x 4½ ft., New Spencer.

One Planer, 48 in. x 18 in. x 24 ft., Good order. Flax.

One " " 31 in. x 31 in. x 7 ft., New Stover.

One " " 30 in. x 30 in. x 8 ft., Whitcomb.

One " " 29 in. x 29 in. x 7 ft.

One " " 24 in. x 24 in. x 4 ft., W. L. & Co.

One Crank Lathe, 18 in. stroke.

Two 8-inch stroke Shapers, Gould.

One 8-inch " " Pratt & Whitney.

One 24-inch " " Hendey Machine Co.

One Brown & Sharp Universal Milling Machine.

One No. 3 Garvin Milling Machine.

Five Lincoln Pattern Milling Machines.

One 24 in. Upright Drill Lathe, Morse.

Special Notices.

PUBLIC SALE

MUSSELMAN FURNACE,

AND ABOUT
FOUR THOUSAND TONS OF IRON OREat the Furnace, at Watts Station, Pennsylvania
Railroad, Lancaster County, Pa.
On WEDNESDAY, October 29, 1879.

The undersigned, executors of the estate of Henry Musselman, deceased, will offer at public sale on the premises the above named furnace, together with the iron ore. All improvements on this property have been made within the last nine years, and are of the most substantial character. Since the furnace has been out of blast it has been thoroughly repaired at a cost of \$12,000, and is now in complete order and ready for work. The property consists, in addition to the furnace, of 8 acres of land, 12 brick houses for hands, brick office, blacksmith shop and stables, railroad sidings and canal facilities.

Sale to commence at 1½ o'clock p. m.
For further information address,
B. F. HESTAND,
A. BOWMAN, Executors.
Marietta, Pa.

WANTED,

In a retail Hardware store, the services of an experienced salesman. Address, stating salary expected and references, P. O. Box 503,
New Haven, Conn.

WEALE'S

Rudimentary Scientific Series.

These highly popular and cheap Series of Books, now comprising our Two Hundred distinct works in almost every department of Science, Art and Education, are recommended to the notice of Engineers, Architects, Builders, Artisans, and students generally, as well as to those interested in Workmen's Libraries, Free Libraries, Literary and Scientific Institutions, Colleges, Schools, Science Classes, &c. Fully illustrated by woodcuts. Catalogues furnished on application.

FOR SALE BY
D. VAN NOSTRAND,
Importer and Publisher,
No. 23 Murray and No. 27 Warren Sts., New York.

CHARCOAL FURNACE PROPERTY
For Sale or To Rent.

At Lawton, Michigan, on the Michigan Central Railroad. In good condition, and can be started in a few weeks at a small expense. Abundance of fuel and cheap labor. Very favorable freight contract goes with the property.

Apply to
D. VAN NOSTRAND, Treasurer,
23 Murray Street, New York.
Or to HENRY FORD, Agent,
Lawton, Mich.

A Rare Opportunity for Investment.

\$25,000 wanted in a well-established manufacturing business, now paying largely, and manufacturing articles protected by patents, for which there is a very large demand. Additional capital wanted to enlarge works to meet demand. Either active or silent interest. Will bear the fullest investigation. References exchanged. Address
W. L. HENRY, 123 S. 8th St., St. Louis, Mo.

FOR SALE,

Punching Machine

Capable of punching 1½ in. hole in 1½ in. plate. A very powerful machine. Price, \$50. Also

A STEAM RIVETER,

"Sellers" make, largest size. Price, \$200. For particulars address
L. D. B.
Office of The Iron Age, 220 S. 4th St., Phila., Pa.

Roll Turner Wanted.

Apply to or address, stating where previously employed, wages wanted, &c.,
JOSEPH DOWNING,
Supt. Elizabethport Rolling Mill,
Elizabethport, N. J.

ANTHRACITE BLAST FURNACE

For Sale or Lease.

Situate on the Susquehanna & Schuylkill R. R., near Pine Grove, Schuylkill Co. Capacity, 120 tons per week. With 10 acres of good land, 20 Houses, Barns, Stables, &c. A branch of the Swatara Creek runs close to the Furnace, 20 miles from Cornwall Ore Bank, 15 miles from limestone, and 10 miles from coal.
THOMAS COUCH,
POTTSVILLE, Pa., October 9, 1879.

To Iron Manufacturers and Capitalists.

For sale, or lease under royalty, in New Jersey, near rail and water transportation, and in the neighborhood of other mines now worked, a farm of 100 acres with valuable iron ore. For further particulars apply to
GALWEY & CASADO,
57 Broad St., New York.

WE WILL TRADE LAND,

Improved or wild, for
HARDWARE, STOVES OR NAILS.

Land is near Topeka.
THOMPSON BROS.,
Topeka, Kansas.

Bissell & Welles,

Wholesale Hardware Auctioneers,

83 Chambers and 65 Reade Sts., N. Y.
Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and Importers.

FOR SALE.

Boiler 150-horse-power, engine 200-horse-power, and other smaller sizes. Machinery for rolling steel tires complete. Machinery for making ice with the greatest economy. All sizes built at short notice. Boilers built to order warranted the most economical.

Apply or address
LESLIE, Manufacturer,
Railroad Avenue, Jersey City.

THE ATTENTION OF PERSONS IN-

terested in Limestone as a flux in iron manufacture is called to an excellent opportunity for investment in connection with one of the well-known quarries of Marblehead (Ohio) Limestone.

Address,
JOHN H. JAMES, Jr.,
Point Marblehead, Ottawa County, Ohio.

Trade Report.

Office of The Iron Age,
WEDNESDAY EVENING, October 15, 1879.

The financial markets have been strong and active since our last report. The money market is firm at 6 @ 7%, with exceptional accommodations at 4%. Time loans are 5 @ 7%.

Statements lately made by Mr. Burchard, Director of the Mint, enable us to estimate with approximate accuracy the enormous volume of gold flowing into the United States from foreign sources. Within the last three months our importations of coin and bullion have amounted to \$34,312,745, and there are at present more than \$5,500,000 on the way, making an aggregate of about \$40,000,000 for the three months. This is at the rate of \$160,000,000 per annum, or more than three times our average exportation of gold since the full exploitations of the California mines. As this country is the largest producer of the precious metals, they should be, in any ordinary condition of trade, a heavy article of export, and not of import. The present great influx of gold must, in the nature of things, be temporary, but the director of the mint thinks it may continue for at least six or seven months.

In the bond market governments were firm, and railroad mortgages active and strong, with the exception of Erie, which declined toward the close. We give below the closing quotations of governments.

The stock market opened a little weak, but later gained strength, with an active speculation in the stocks usually most active. We give below the closing quotations.

The bank return shows an increase of \$547,250 in surplus reserve, which now stands at \$800,675, against \$3,531,600 at this time last year, and \$8,114,200 at the corresponding period in 1877. The loans show a gain this week of \$2,337,500; the specie is up \$2,417,200; the legal tenders are decreased \$1,655,000; the deposits other than United States are up \$859,800, and the circulation is increased \$147,700.

The following is an analysis of the bank totals of this week compared with that of last week:

	Oct. 4.	Oct. 11.	Comparisons.
Loans.....	\$266,364,300	\$263,701,800	Inc. \$2,662,500
Specie.....	20,149,100	22,566,300	Inc. 2,417,200
Legal tenders	38,093,900	36,438,500	Dec. 1,655,400
Deposits.....	81,920,700	82,780,500	Inc. 859,800
Reserve re-quired.....	57,080,175	58,105,125	Inc. 1,024,950
Surplus.....	269,485	800,675	Inc. 531,190
Circulation.....	27,938,440	28,086,140	Inc. 147,700

The foreign trade movements at the port of New York since our last issue are shown in the following tables:

IMPORTS.

For the week ended October 11:

	1877.	1878.	1879.
Dry goods.....	\$1,185,089	\$1,575,293	\$1,914,377
General mde.....	4,309,234	4,129,333	4,337,387
Total for week.....	\$5,494,323	\$5,704,626	\$6,251,764
Prev. reported.....	255,130,312	221,008,380	247,905,780

Since Jan. 1.....\$66,818,534 \$27,613,056 \$253,577,444

Included in the imports were items of merchandise valued as follows:

	Quantity.	Value.
Anvils.....	360	\$4,700
Brass goods.....	41	5,493
Bismuth.....	8	3,703
Bronzes.....	49	10,824
Chains and Anchors.....	20	632
Copper.....	207	88,750
Cutlery.....	39,153	39,153
Gas fixtures.....	3	464
Guns.....	75	14,678
Hardware.....	12	57
Iron, pig, tons.....	34,118	34,118
Iron, Railroad bars.....	5,098	24,541
L cotton ties.....	500	402
Iron ore, tons.....	13,103	10,151
Iron, other, tons.....	119	8,750
Lead, pigs.....	738	3,504
Metal goods.....	353	21,994
Nails.....	145	145
Needles.....	1	1
Nickel.....	1	139
Old metal.....	1	203
Platina.....	9	8,145
Plated ware.....	9	3,703
Percussion caps.....	9	4,674
Saddlery.....	6	333
Steel.....	17,005	17,005
Spelter.....	16,800	2,338
Silverware.....	10	508
Tin, boxes.....	28,269	126,073
Tin, bbls.....	20	375
Tin, 10, 40 lbs.....	794,619	119,933
Wire.....	101,386	8,654
Zinc.....	101,386	8,654

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended October 14:

	1877.	1878.	1879.
For the week.....	\$4,041,658	\$6,838,004	\$9,735,536
Prev. reported.....	215,921,674	268,627,972	261,894,780

Since Jan. 1.....\$21,863,349 \$75,486,876 \$271,031,345

EXPORTS OF SPECIE.

For the week ended October 11:

Total for the week.....	\$153,207	
Previously reported.....	12,694,202	
Total since Jan. 1, 1879.....	\$12,847,409	

Government bonds at the close were quoted as follows:

	Bid.	Asked.
U. S. 6's 1880 registered.....	104	104½
U. S. 6's 1880 coupon.....	104	104½
U. S. 6's 1881 registered.....	105½	105½
U. S. 6's 1881 coupon.....	105½	105½
U. S. 6's 1882 registered.....	105½	105½
U. S. 6's 1882 coupon.....	105½	105½
U. S. 4's 1881 registered.....	105½	105½
U. S. 4's 1881 coupon.....	105½	105½
U. S. 4's 1882 registered.....	105½	105½
U. S. 4's 1882 coupon.....	105½	105½
U. S. Currency 6's 1885.....	121	121
U. S. Currency 6's 1886.....	121	121
U. S. Currency 6's 1887.....	121	121
U. S. Currency 6's 1888.....	121½	121½
U. S. Currency 6's 1889.....	121½	121½

The following were the closing quotations of active shares:

	Bid.	Asked.
Alton and Terre Haute.....	16	16½
American District Telegraph.....	30½	31
Atlantic and Pacific Telegraph.....	40½	41
Canada Southern.....	73	75
Caribou.....	45½	46
Col. Chicago and Indiana Central.....	13½	14
Cleve. Col. Cin. and Ind.....	67½	68
Chicago, St. Paul and Minn.....	45½	46
Chicago and Alton.....	95	95½
Chesapeake and Ohio.....	13½	14
Delaware, Lack. and Western.....	77½	78

Delaware and Hudson Canal.....	64½	64½
Express-Adams.....	106	107
"American.....	55½	57
"United States.....	59	61
"Wells, Fargo & Co.....	101	103
Erie.....	39½	39½
Harlem.....	65	68½
Hannibal and St. Joseph.....	135	136
"Pref.....	5	57
Houston and Texas.....	45½	46½
Illinois Central.....	95	95½
Ind. Cincinnati and Lafayette.....	10½	10½
Kansas Pacific.....	79½	80½
Kansas and Texas.....	21½	21½
Lake Shore.....	90½	90½
Louisville and Nashville.....	67½	67½
Michigan Central.....	88½	88½
Morris and Essex.....	97	98
Nashville and Chattanooga.....	47½	48½
Norfolk and Western.....	71½	71½
Northwestern.....	85½	86½
"Pref.....	101½	102½
Northern Pacific.....	29½	29½
Ohio and Mississippi.....	29½	29½
"Pref.....	52	53
Ontario Silver.....	40½	41½
Pacific Mail.....	31½	31½
Panama.....	18½	18½
Quicksilver.....	14	14½
Rock Island and Pacific.....	51	51½
St. Louis and Iron Mountain.....	45½	45½
St. Louis Kansas City Northern.....	45½	45½
St. Louis and San Francisco.....	64½	65
"Pref.....	19½	19½
St. Paul.....	22½	22½
"1st pref.....	47	48
Sutro Tunnel.....	71½	71½
Union Pacific.....	34	34½
Wabash.....	45½	46
Western Union Telegraph.....	28½	28½
Erie and Pittsburgh.....	80½	80½

The following is a copy of resolutions passed at a special meeting of the Board of Directors of the Hardware Board of Trade, Limited, held at their rooms, Thursday, October 9, 1879:

Whereas, it is our painful duty to record the death of Mr. Charles Bliven, one of the oldest and best known hardware merchants of the city of New York, therefore be it

Resolved that we tender to the members of the family of the late Charles Bliven our sympathies in their bereavement, and to his late business associates sincere regret for the removal of a merchant of the highest integrity, the most untiring industry and energy, and assure them that this Board of Trade will feel the loss of his devotion to the interests which we are serving.

Resolved that a copy of these resolutions be sent to the family of the deceased, and to each member of this Board of Trade.

E. H. COLE, Secretary.

GENERAL HARDWARE.

Notwithstanding that the time has arrived when the heavy orders on jobbers' account have nearly all been placed, the market seems to have lost little, if any, of the activity which has characterized it for the past few months. There is, owing to the late advances, less of the speculative class of orders on the market, but any deficiency from the causes mentioned seems to be fully made up by purchases on account of the retail trade of the country. The demand from this class is unusually heavy, and indicates the healthy condition of trade and the necessities of consumers more plainly than the earlier purchases of the wholesale dealers. The recent advances are, so far as we can ascertain, lived up to in the strictest sense; purchases are being made on short time, and payments, we are informed, are, as a rule, prompt and satisfactory.

Samuel A. Haines, of the firm of Graham & Haines, returned from a European trip on Saturday last in the steamship Germanic. We were shown possibly the largest order ever placed for Agricultural Tools on foreign account, as one of the results of his trip. Mr. Haines informs us that the Europeans are waking up to the fact that business in this country is enjoying the activity that we who are here so fully realize, and as a consequence are endeavoring to place orders on a large scale for some lines of goods, but in the present condition of the market, unless buyers agreed to accept the goods at prices ruling at date of shipment. Owing to these circumstances Mr. Haines returned fully a month earlier than he intended.

A good deal of apprehension is felt in regard to the future of our export trade in Hardware and Agricultural Implements by those who are capable of judging. They say that the sharp advances demanded by manufacturers will effectually bar out many lines of goods which now have a firm hold in foreign markets, and that the very expensive work of introducing these goods will be lost to our manufacturers unless some middle course is adopted, and good judgment in the conduct of this business is used.

The demand for foreign hardware is active, and in heavy goods an upward tendency is noticeable. The Wiebusch & Hilger Hardware Co. are advised by cable of an advance in the price of Peter Wright's Anvils of 1/4 per cent, necessitating an advance here of 1/4 cent per lb. Hermann Boker & Co. have advanced their "Trenton" Anvils to 10 1/4 cents per lb.

John Wilson, the well-known manufacturer of Butcher Knives and Steels, Shoe Knives, &c., Sheffield, England, in a letter dated September 25, says: "Our sales in the United States are exceedingly satisfactory, being still steadily increasing and at the present time larger than ever." We invite attention to his advertisement on the 20th page.

We have received the following joint circular:

NEW YORK, Oct. 15, 1879.

On account of the general advance in material, our list prices on Straight Trimmers, on and after this date, will be advanced as follows:

Straight Trimmers, inch. 6, 6½, 7, 7½, 8, 8½, 9, 10	Per doz.....	\$11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Straight Trimmers, inch.....	Per doz.....	\$11, 12, 13, 14, 15, 16, 17, 18, 19, 20

A revised general list will be issued as soon as prices are fully established.

HERMANN BOKER & CO.,

For R. Heinisch's Sons.

WIEBUSCH & HILGER HARDWARE CO.,

For Henry Seymour Cutlery Co.

BENNETT & WETMORE.

J. WISS,

UNION SHEAR CO.

EMPIRE KNIFE CO.

MITCHELL, RENZ & CO.

The demand for Nails is fair, and the tone of the market in the matter of price is strong. Stocks continue light and badly assorted. We quote 10d. \$3.60 net; for small lots an advance of 10 @ 15 cents per keg is asked.

The Ausable Horse Nail Co. have advanced the price of their Horse Nails 10 per cent. They say: "In consequence of the rapid advance in cost of Iron and the unsettled condition of the Iron market, we are compelled to withdraw all offers previously made, and we will accept orders only at prices ruling date of shipment." They quote to-day discount 20 per cent. from their list. Corresponding advances have been made by other manufacturers of these goods.

Russell & Erwin Mfg. Co. have still further advanced prices of the Douglass Mfg. Co.'s goods. They now quote "Extra" discount 65 and 5 per cent.; No. 1, discount 65 and 10 per cent.

The Adams & Westlake Mfg. Co., and E. Ketchum & Co. have advanced the price of Patent Metallic Sieves to discount 25 per cent., instead of 33 1/3 per cent., as formerly.

The Manhattan Brass Company have removed their office and sample-room from No. 83 Reade street to their factory. They have issued the following circular:

OFFICE OF THE MANHATTAN BRASS COMPANY,
FIRST AVENUE, 27TH TO 28TH STREET,
NEW YORK, October 8, 1879.

DEAR SIR: Owing to the recent large advance in price of Copper and Brass (fully 30 per cent.), we are compelled to make a small advance in our Polished Brass Goods, Fire Sets, Fenders, &c. Our best discount from this date will be 15 per cent. off list prices.

Very respectfully yours,

MANHATTAN BRASS CO.

Peck & Snyder, Nos. 124 and 126 Nassau street, have issued an illustrated price list of Skates, Skate Straps, &c., for the coming season. The following are their trade discounts:

1879-80.

JOBBING DISCOUNTS, AC., FROM THE ATTACHED LIST.

American Club Skates..... Dis. per cent. 25

Clippers, all Clamps..... " " 25

Nos..... " " 25

Winlow's Club Skates..... " " 25

Nos..... " " 25

Nos. 220, 270 and 280, Ladies' Skates..... " " 25

Skate Sharpeners, Heel Plates and Ice Creepers..... " " 25

Skate Straps..... " " 25

Roller Skates and Boxing Gloves..... " " 25

The Parker & Whipple Co., West Meriden, Conn., have changed their discount on real Bronze goods from 50 to 40 per cent. The new price went into effect on the 13th inst.

Hundley & Hanks, proprietors of the North Carolina Handle Co., have issued an illustrated catalogue and price list, in which they show a good assortment of Hickory Handles for Axes, Picks, Hatchets, Hammers and other tools; Ash Handles for Agricultural Implements, Mallets, Spokes, &c. Their office and warehouse in this city is at Nos. 79 Re

able advance would be paid if orders could be placed, but the Bloomeries are sold close up and are not offering at present. The following are only approximate quotations, viz.: Sunken Scrap Blooms (2464 lb), \$45 @ \$47.50; Northern Ore Blooms (2240 lb), \$40 @ \$43; best quality Charcoal Billets (2240 lb), for wire and steel purposes, \$65 @ \$67.50; Bars, \$70 @ \$72.50; Sheet Iron Blooms, cornered (2464 lb), \$60 @ \$65; Cold-blast Charcoal Plate Blooms, \$60 @ \$62.50; run-out Anthracite, \$52.50 @ \$55.

Structural Iron.—A considerable amount of business has been done since date of our last report, and there are inquiries for large lots additional, but manufacturers are compelled to move cautiously, as they are already well supplied with orders. One lot of 800 tons has been closed to-day, and smaller transactions are reported almost daily. Prices are firm, with an advancing tendency, as follows: Angles, 3.8¢ @ 4¢; Beams, 4.2¢; Channels and Tees, 4.5¢.

Plate and Tank Iron.—The demand shows no signs of abatement, and orders can be obtained for almost any quantity that manufacturers are willing to accept. Prices show no change since last week, but the tone of the market is firm at about the following rates: Tank, 4¢; C. No. 1, 4 1/4¢; C. H. No. 1 Shell, 4.5¢; Flange, 5.5¢; Solid Fire-box, 6.5¢; Best Bloom, 7¢.

Sheet Iron.—The activity noted during the past three months is still continued, and the mills are running to their fullest capacity without being able to overtake the demand. Consumption seems to be almost beyond precedent, but there is some fear that higher prices will check the demand. In some directions we learn that other material is already taking the place of Sheet Iron. The following are approximate quotations for large quantities; small lots command \$5 @ \$8 per ton more money. We quote: Common Sheet, No. 20 to 23, 5.2¢ @ 5.4¢; No. 24 to 28, 5.5¢ @ 5.8¢; No. 16 to 24, 5.5¢ @ 5.6¢; No. 25 to 28, 5.6¢ @ 5.7¢; Refined Plates or Blue Annealed, 5.1¢ to 16, 4.8¢; 17 to 19, 4.7¢; Best Bloom, 26 to 28, 7.5¢; 16 to 24, 7¢ @ 7.1¢; Best Bloom, 7.5¢; A Patent Plashed, 11¢; B Patent Plashed, 10¢; Best Blooms, Galvanized, 10 ¢ discount; second quality, 20 ¢.

Bar Iron.—There is not much to be said in this department. The mills have all the work they can attend to, with prospects of a most encouraging character. The demand is fully up to the utmost capacity for manufacture, and heavy orders for future delivery are not entertained at present. We quote 3¢ @ 3.2¢, the latter being the usual rate. Market very firm.

Steel Rails.—The market is firm and under an active demand full prices are readily obtained. Several sales are reported at about \$50 @ \$52 at mill, but manufacturers are not entering orders to any important extent, as they are already pretty well filled up, and there is every reason to anticipate a heavy demand during the immediate future. We quote: \$50 @ 52, at mill; market firm.

Iron Rails.—There is no change in the general condition of the market; but very little business has been done during the week, owing to the high prices asked by manufacturers. The increasing cost of material leaves no margin for a reduction, so that \$45 @ \$47 at mill is about as low as they can be made. Sales of small lots are of daily occurrence, but the high prices restrict business considerably.

Old Rails.—The market is a little quiet, and although prices are not notably lower, there are evidences of weakness which may be more fully developed in course of a few days. Sales have been made at \$31.50 @ \$32. They are offered, to arrive, at \$33.50, but buyers are disposed to limit their purchases to immediate requirements.

Scrap Iron.—Is very scarce, and full prices are readily obtained for desirable lots. We quote: Cast at \$18 @ \$20; Wrought, \$30 @ \$33.

Old Car Wheels.—Buyers offer \$26, with sales reported at that figure.

Nails are firmly held at \$3.60. The demand is very active, and stocks in first hands much reduced.

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, Pittsburgh, Pa., October 14, 1879.

The most noticeable event of the past week was the lull in the Pig Iron market, which, however, was not unexpected, and occasioned no particular anxiety in the trade. In all other branches of business there is a continued fair degree of activity, and our merchants and manufacturers, as the rule, are doing a very satisfactory business. A resumption of river navigation, which has been suspended the greater part of the time since July, would increase business here very much, as the cost of transportation is always much less by boat than by rail, and there are points accessible by water that as yet have no railroad facilities. The railroad facilities of Pittsburgh are better now than ever before, the opening up of the Pittsburgh and Lake Erie Railroad giving an outlet both East and West, independent of the Pennsylvania Company, and the latter company has been forced to abandon the discriminative policy which it so long exercised toward this city. In a word, the outlook is bright for a good, healthy business during the fall and winter, not only here, but throughout the West.

Pig Iron.—The market has been very dull the past week, but there appears to be no weakening in price. So far as we can learn, there is no disposition to make any concessions whatever in order to effect sales, and, as stocks in first hands are very light, the offerings are of necessity small, and in view of the fact that the furnaces in blast are nearly all sold from one to three months ahead, must continue so for some time to come. The output, not only here and at those points tributary to the market, but throughout the West, is as large now as it will be this winter. Indeed, it may fall off, as there appears to be a scarcity of ores, while the consumption, it is believed, will keep up to where it is until the close of the year. It is worthy of notice that consumers hereabouts, as a general thing, would like to see current

rates maintained, but they are nearly all pretty well stocked, and do not care to increase their supply until assured that the market will not go back. When pig is held firmly they have less difficulty in getting a remunerative price for the products. Bituminous Coal Smelted Irons from Lake Superior ores may be quoted as follows: \$30 @ \$32, 4 months, for Foundry; \$29 @ \$30 for Gray Forge Neutral, and \$32 @ \$33 for Red-short do.; Bessemer, \$34 @ \$35, for No. 1. No recent sales. Coke Irons from native ores are \$28 @ \$30 for Mill and \$30 @ \$31 for Foundry. Very little Anthracite is offering, producers claiming that they can now obtain better prices at home. Hanging Rock Charcoal, \$35 @ \$40, 4 months, for Nos. 2 and 1 Warm Blast. The stock here is very light.

Manufactured Iron.—The demand for all kinds of Manufactured Iron keeps up remarkably well for the season. Orders continue to come forward freely and prices are well maintained. It is doubtful whether an order of any magnitude could be placed for future delivery at current rates. The policy of our manufacturers is to refuse orders for future delivery except upon condition that the buyer is to pay market price at time of delivery, whatever it may be. Of some kinds of Iron there is very little available, and for these there is considerable inquiry. A broker informs your correspondent that he has an order for Tank Iron, but is unable to find anyone willing to take it, as there is no stock and the mills are all sold ahead. There have also been several orders for Skelp Iron in the market recently, the latest reported being one of 2000 tons from Louisville, Ky., some of which could not be placed. For Hoop and Sheet Iron there is also a continued demand, and there is not much doubt but the mills generally will have all they can do until the close of the year. We continue to quote on a basis of 3¢, 60 days, for Bars.

Nails.—There has been but little change in the general position of the market since our report of last week, and business is moderately active. Some of the largest jobbers in the West bought pretty freely before prices got up so high, and this being the case the demand since the last advance has been rather light, with, as already stated, but little prospect of any improvement during the remainder of the year. While business with our Pittsburgh manufacturers is not very active, they have but very few low-priced contracts. We continue former quotations, \$3.40, 60 days, 2 ¢ off for cash, less 10¢ on lots of 200 kegs and upward.

Wrought Iron Pipe.—There is no abatement in the demand, which has been with a precedent in the history of the business for some months past, owing to the fact that, being so much cheaper, it is taking the place of other kinds of pipe, and is going into general use. Large shipments are being made to all parts of the country, and all the mills are very busy, notwithstanding the very decided advance in prices within the past three months. We continue to quote at 25 ¢ off regular list on Gas and Steam Pipe, and same on Boiler Tubes; Oil-well Casing, 80¢, net; do. Tubing, 25¢, net.

Horse and Mule Shoes.—Continue moderately active for the season, with no recent change in prices. We quote 100-keg lots, \$3.50 and \$4.50, cash.

Rails.—The Edgar Thomson Company are still declining to make any additional contracts, and in the absence of sales we omit quotations. The company named have orders booked sufficient to absorb their entire production the remainder of the year, as well as a part of 1880. In regard to Old Iron Rails there is nothing new to report; there have been no sales for some time, and we continue to quote nominally at \$33 @ \$35 per ton.

Railroad Spikes.—Are still quoted at 3¢ @ 3 1/2¢, with a continued fair business, although orders are not so numerous now as they were a month or so ago. There is every indication of a large demand next spring for all kinds of railway supplies.

Ores.—There is an active demand for desirable Ores and a scarcity, consequently prices are very firm and tending upward. The arrivals both of Lake Superior and native Ores are light, and if they could be obtained the consumption would be much larger than it is. Some furnaces will not be able to start up until next spring for want of Ores, while others will be obliged to curtail their production for the same reason. There is considerable Iron Mountain Ore on the bank at Carondelet awaiting shipment to various furnaces along the Ohio River, but it cannot be moved in consequence of the suspension of river navigation. We understand several lots of foreign Ores have been purchased for consumption here, owing to the present difficulty in obtaining American Ores of a desirable quality. The production next year will be largely increased.

Steel.—There is nothing particularly new to report in regard to this important Pittsburgh interest. Notwithstanding the largely increased demand for Iron, there appears to be no abatement in that for Steel, as the consumption still appears to be increasing, and the mills here are all reported full of orders.

Scrap.—There is a continued fair business, and as stocks are light, prices are well maintained. No. 1 Wrought Scrap may be quoted at \$38 @ \$40, net. Sales have been made at the inside figure. Old Car Wheels, \$30 @ \$32, gross; Old Car Axles, net, \$32 @ \$33; do. Springs, \$31 @ \$32.

Window Glass.—There is a continued good demand, with very light stocks in the hands of manufacturers, and prices are firm, but unchanged. The fact that the supply of French Glass in this country is very much reduced has stimulated the market for domestic, and an advance in prices soon is not improbable. The wages question appears to be settled for the present, and no further disturbance is expected.

Coke.—There is a continued steady demand, and notwithstanding the increased capacity, the consumption keeps pace with the production, and prices are well maintained, ranging from \$1.20 @ \$1.30 per ton, delivered free on cars at ovens.

Coal.—There is no movement by river, and it is hard to say when there will be, as

there is very little prospect at this present writing of a rise. There is considerable going forward by rail, and the outlook is that there will be an increased business this fall and winter, owing to the starting up of so many industries which are large consumers. In some quarters there is a spirit of restlessness manifested among the miners, and strikes are apprehended.

Petroleum.—The market for this important article has been quite active and firmer the past week, and, as compared with the date of our last report, prices are higher. While statistically there has been no important change in the situation recently, the increased cost of production is having its effect, and as there is a good deal of idle capital, the feeling prevails, to a considerable extent, that the raw article is a good investment at current prices. There is considerable doing in the way of speculation, and within the past few weeks prices have gone up from 30¢ @ 35¢ per lb. What it is based on we cannot say, but the feeling prevails that prices will rule considerably higher next year, and no doubt some of the purchases now being made will be carried over.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts., Chattanooga, Oct. 13, 1879.

Business continues good. The weather has been unseasonably warm. The middle of the week brought us the first rain of any consequence since September 1. We shall have to have still more before boats can run, a fact which has some bearing on the Iron market, as considerable amounts depend on the rivers to reach market. The market for all articles into which Iron enters largely as an ingredient, and for all kinds of metal, has advanced largely during the week.

Pig Iron.—The stocks of all grades and kinds are light. Furnaces have not yet overtaken their July and August orders, and what small amounts they manage to eke out, beyond satisfying the old demands, hardly make business enough to be dignified with the term market. About 2000 tons of various kinds changed hands during the week. The advance on all grades is about 3¢ per ton over last quotations. Coke Irons—No. 1 Foundry, \$28 @ \$33; No. 2, \$25 @ \$28; Gray Forge, \$28 @ \$30; White and Mottled, \$25. Hot-Blast Charcoal—No. 1 Foundry, \$28 @ \$33; No. 2 ditto, \$25 @ \$28; Gray Forge, \$27 @ \$28. Cold Blast Charcoal—Car Wheel Metal, \$30 @ \$40.

Muck Bar, &c.—The market continues bare of this article, producers consuming all they make. Old Rails, \$32 @ \$35, being an advance of 3¢ @ \$10; Wrought Scrap, \$28 @ \$33, an advance of \$10 @ \$12; Old Car Wheels have advanced and are worth \$25. All these articles are stiff and rising.

Ores.—Brown Hematite, 50 to 56 ¢; per ton, \$1.75 @ \$2.25. Red Fossiliferous, 50 to 56 ¢; per ton, \$1.20 @ \$1.60. The above prices for ores delivered in Chattanooga on cars or on the wharf from flat boats.

Nails.—Remain at \$3.50, and very strong.

Manufactured Iron.—Has gone along with Pig. We quote Bars at \$3.50; Railroad Spikes, \$3.75; Track Bolts, \$4.75; Trestle Bolts, \$5.50.

Coke.—We quote 10¢ per bushel for Washed Foundry, and scarce. Furnace Coke—none in market.

Coal.—The Coal market experienced a flurry in Knoxville last week. One of the Coal Creek Companies put down household to 10¢ delivered. This company operates its mine with convict labor. They say they "mean business," and will continue the market at that basis. They are making contracts for delivery at Atlanta and other cities South at the same rate. The other Coal Creek operators are trying to hold their product up, and hope to succeed because their competitor cannot supply all the demand. The contest will be watched with interest by consumers. We quote: Best household Coals 12 1/2¢ @ 14¢, delivered. Run of mine, to manufacturers, \$1.25 @ \$1.75 per ton.

Iron Rails.—Have sharply advanced in sympathy with Crude metal, Scrap and Old Rails. We quote them at \$44 @ \$45, and the market bare.

Steel Rails.—We quote at \$47 at mill, and no supply for transient buyers.

BOSTON.

OCTOBER 11.—If, as is hinted, there is a lull in the Iron market, it has resulted in no diminution of firmness. There are no available stocks of American Pig Iron at the shipping ports, and \$31 @ \$32 has been paid for No. 1 X; \$29 for No. 2 X, and \$25 for Gray Forge, and contracts at prices nearly as high extend far into next year. The receipts of Scotch Pig Iron this week have been about 900 tons, and we quote \$25 for Eglington and \$29 for Gartsherrie. Old Rails appear to have reached the highest point, and there is apparently an easier tendency for the moment. We quote American nominally \$34, but English to arrive are available at \$30.50. Manufactured Iron.—Bar is firm at 3¢ for large lots and 3 1/4¢ in a retail way. Sheet Iron has further advanced, and we now quote 4 1/4¢ @ 5¢ for Nos. 12 to 18, 5 1/4¢ for Nos. 20 to 24; 5 1/2¢ for Nos. 25 and 26, and 6¢ @ 6 1/4¢ for Refined. The demand for Galvanized and Russia Iron is equally active, and prices have advanced to 10¢ for Nos. 14 to 20; 11¢ for Nos. 20 to 24; 12¢ for Nos. 25 and 26; 14¢ for 15¢ for Russia perfect, and 1/2¢ less for do. No. 1 stained. Copper has continued to tend upward, and there have been sales at 21¢ @ 21 1/2¢ for ingot. The Boston store price is 22¢ for small lots to-day. Manufacturers have been advanced 2¢ 1/2¢ all round, and we now quote: Copper Sheathing at 26¢; Braziers, at 28¢; Bolts, 28¢; Bottoms, 30¢; American Yellow Metal Sheathing, 17¢ @ 18¢; Yellow Metal Bolts, 22¢; and English do., 12¢ @ 12 1/2¢, in bond. Antimony has advanced to 21¢ @ 22¢. Lead has sold up to 5¢ @ 5 1/4¢ for large lots of Pig, and the Boston store price is 5 1/2¢. Manufacturers are higher, and we quote: Lead Pipe, 6 1/2¢; Tin-Lined Pipe, 12¢; Bar Lead, 7¢; Sheet Lead, 7¢; Block Tin Pipe, 35¢. All of these are subject to the usual trade or 10 ¢ dis-

count. Spelter unchanged at \$6.20 per cwt. for car-load lots, and is quiet and firm. Sheet Zinc is in fair demand at 8 1/4¢ @ 9¢ from store, an advance of 1/4¢ @ 1¢ 1/2¢ since our last. Tin is active and excited, and the advance since our last has been over 3¢ 1/2¢. We now quote Straits at 21 1/2¢ @ 22¢ for large lots, and 22¢ @ 23¢ for smaller parcels. We quote Banca at 23¢ @ 24¢ and English L. & F. at 22¢. Tin Plates have further advanced, and are strong and active at \$7.75 @ \$8 for Charcoal I. C.; \$7 @ \$7.50 for Coke I. C.; and Charcoal Terns at \$9.25 for M. F., and \$7.25 for ordinary do.—Commercial Bulletin.

ST. LOUIS.

St. Louis, Mo., Oct. 13, 1879.

Supply of Iron still short. Demand good. We quote as follows, viz.:

CHARCOAL HOT BLAST.
Missouri.....\$34.00 @ 35.00
Southern.....32.00 @ 34.00
Hanging Rock.....None offering.

COKE AND COAL.
Missouri.....None offering
Southern, No. 1.....39.00 @ 40.00
Ohio River, No. 1.....30.00 @ 33.00
Jackson County, No. 1.....30.00 @ 33.00
Hocking Valley, No. 1.....30.00 @ 33.00
No. 2 and Mill \$1 to \$2 per ton less.

COLD BLAST.
Missouri.....35.00 @ 37.00
Southern.....38.00 @ 40.00
Ohio.....40.00 @ 42.00

IRON ORE.
Iron Mountain.....7.50 @ 8.00
Southwest.....7.00 @ 7.50
Ore for fix.....9.00 @ 9.50

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of Oct. 13, write as follows: A good general demand has characterized the market during the week, while the offerings of all grades are very limited. Under these conditions prices have advanced again, as indicated by the quotations below. It is becoming daily more manifest that the supply available for delivery during the fall and winter will not be more than barely sufficient to meet the actual requirements for consumption. The movement in Car Wheel Irons is increasing, the higher numbers being in especial request. Old Car Wheels are scarce and lots offering are quickly picked up.

HOT-BLAST FOUNDRY.
Hanging Rock C. C., No. 1.....\$40.00 @ 42.00
Southern, No. 1.....38.00 @ 40.00
Hocking Valley S. C., No. 1.....35.00 @ 36.00
Open Silver Gray, No. 1.....34.00 @ 36.00
Jackson County S. C., No. 1.....35.00 @ 36.00
Hocking Valley, No. 1.....35.00 @ 36.00

FOURGE IRONS.
Hanging Rock C. C., No. 1.....\$38.00 @ 40.00
Cold-short, No. 1.....37.00 @ 38.00
Old Car Wheels, cash.....36.00 @ 38.00
Pecham's Pat. Refined Steel Blooms.....64.00 @ 65.00
"double hammered.....63.00 @ 70.00

CAR WHEEL AND MALLEABLE IRONS.
Hanging Rock C. C., No. 1.....47.00 @ 50.00
Alabama and Georgia, Cold-short.....43.00 @ 47.00
Lake Superior.....48.00 @ 49.00
Salisbury.....50.00 @ 55.00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Oct. 11, write us as follows: The market is very firm. Very little Iron is offered at any price. Sales are all for cash, and we quote on this basis:

FOUNDRY IRONS.
No. 1 Hanging Rock, Charcoal.....\$38.00 @ 40.00
No. 2.....37.00 @ 38.00
No. 3 Southern, Charcoal.....38.00 @ 39.00
No. 4.....37.00 @ 38.00
No. 5 Hanging Rock, Stoneseal and Coke.....37.00 @ 38.00
No. 6 Hanging Rock, Stoneseal and Coke.....36.00 @ 37.00
No. 7 Southern, Stoneseal and Coke.....37.00 @ 37.00
No. 8 Stoneseal and Coke, Cold-short.....35.00 @ 36.00
"American Scotch".....35.00 @ 36.00
Silver Gray.....30.00 @ 32.00

MILL IRONS.
No. 1 Charcoal, Cold-short and Neut'l.....34.00 @ 35.00
No. 2 Stoneseal and Coke, Cold-short and Neut'l.....32.00 @ 33.00
No. 3 Stoneseal and Coke, Cold-short and Neut'l.....30.00 @ 32.00
No. 4 Missouri and Indiana Red-short.....34.00 @ 35.00
White and Mottled, Cold-short and Neut'l.....35.00 @ 36.00

CAR WHEEL AND MALLEABLE IRONS.
Hanging Rock, Cold-blast.....40.00 @ 45.00
Alabama and Georgia, Cold-blast.....43.00 @ 44.00
Kentucky, Cold-blast.....40.00 @ 42.00

W. B. BELKNAP & Co., Iron and Steel merchants, Nos. 113 and 115 West Main street, under date of Oct. 13, write as follows: The excessive warm weather mentioned in our last report has continued all the week, undoubtedly to the detriment of trade, but the volume of the latter has been so large at any rate that the slight falling off has not been without its compensations. The stage of water in the Ohio River is lower than known for many years. Small stern-wheel boats are plying between here and Cincinnati, while navigation above that point is almost totally suspended. The scarcity of coal is beginning to cut some figure in the situation, some of the river mills having withdrawn all quotations on account of its lack. Pig Iron continues strong, with perhaps an upward tendency, though very little is offering, but there is not the same briskness in regard to bar or merchant iron. The advances now are being felt, more especially in smaller articles, and this unfortunately is bringing about a change of lists, which involves us in some confusion. For instance, the Putnam Nail Company advanced their list 1¢ per lb. The Northwestern have advanced their list 2¢ 1/2¢ lb. Up to the time of writing the Globe has not been heard from. We think this will convince these manufacturers, now changing back to higher prices, of the folly of having reduced their lists some years ago. The Ausable Horse Nail Co., in adhering to the old schedule, is now having a decided advantage over the rest. These continuous alterations of lists are good for the printer, but discouraging to the publication of hand-some catalogues, and most confusing to the invoice clerk. The advance in American Steel of 1¢ 1/2¢ lb was not unexpected, following directly upon the rise in Swedish Iron. The most startling developments are in the metal market. The advance in Tin, Antimony, Spelter and Lead and Solder have fairly taken the buyers' breath away. These articles have been attached to Prof. Wise's balloon their disappearance in the clouds could have been scarcely more sudden.

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, Baltimore, reports us the following under date of Oct. 13: Activity still characterizes this market for the past week. Stocks are unusually light and much broken, with the demand in excess of the supply, with latter coming forward slowly. We now quote ordinary sizes Refined Bars at 3 1/4¢ @ 3 1/2¢, with proportionate advances on all extra sizes.

Ref. Bar Iron, 1 to 6 by 3/4 to 1.....\$3 1/4 @ 3 1/2¢
" 1 to 4 1/2 by 1 1/2 to 2.....3 1/4 @ 3 1/2¢
" 1/2 to 1, Round.....3 1/4 @ 3 1/2¢
and Square.....3 1/4 @ 3 1/2¢
Hoop Iron, 1 1/4 wide and upward.....3 1/4 @ 3 1/2¢
Band Iron, from 1 1/4 to 4 in. wide.....3 1/4 @ 3 1/2¢
Horse-shoe Iron.....3 1/4 @ 3 1/2¢
Norway Nail Rods.....12 1/2 @ 13¢
Black Diamond Cast Steel.....7 @ 8¢
Machinery Steel.....7 @ 8¢
Cast Spring Steel.....8 @ 8 1/2¢
Homogeneous Steel Plate.....6 1/2 @ 7¢
Common Horse Nails.....10 @ 14¢
R. R. Spikes, 5 1/2 x 16.....3 1/2 @ 3 1/2¢
Perkins Horse shoes, 7 keg of 100 lbs.....4.12 1/2
Mule shoes.....5.12 1/2

Putnam Horse Nails.....\$ 10 20 30 40 50
Globe Horse Nails.....\$ 18 20 30 40 50
Less list discount to the trade

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows under date of Oct. 13: The Iron market remains about same as last report, and we continue last quotations, viz.: Baltimore Charcoal Wheel Iron.....\$38.00 @ 40.00
Virginia.....39.00 @ 41.00
Anthracite No. 1.....30.00 @ 31.00
" No. 2.....29.00 @ 30.00
" No. 3.....28.00 @ 29.00
" Mottled and White.....25.00 @ 26.00
Charcoal, C. B. Blooms.....65.00 @ 66.00
Refined Blooms.....60.00 @ 65.00

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

LONDON, ENG., Sept. 29, 1879.

THE BUSINESS SITUATION

is becoming stronger, apart from the rather feverish indications which are manifested in a few special branches or in particular districts. We get the best possible intelligence from your side, and encouraging news from France and Belgium, but in spite thereof, our own leading industries move very slowly up the inclined plane which is the only path to renewed prosperity. In saying this, I have no desire whatever to depreciate the improvement which has already taken place in pig iron, rails, and certain other commodities, but merely wish to record an unbiased opinion to the effect that the change appears to me to be genuine to a certain point only, and to be thereafter the outcome of strained and forced market manipulation. I am not now referring at all to the American demand or trade, but to our own industries solely. The sudden receipt of your orders in Scotland and Cleveland for pig, and in Wales for rails, apparently bewildered many persons, who would not believe that the reports to that effect were accurate. When their unbelief could not be longer entertained they gave way suddenly, and have since rushed to the opposite extreme in proclaiming the certainty of a state of trade of such abnormal activity as has not been witnessed at any previous period. Benefiting by this oscillation, and being of opinion that the chances incidental to the trade might turn up trumps, a large number of speculators have also devoted their attention to the subject, and their operations in Glasgow and elsewhere would lead one to suppose not only that the millenium had been "ordered," but that prompt delivery had been effected. It may be urged, of course, that persons do not speculate unless they have some chance of making money thereby, but I don't think that argument will have any weight whatever with those who know anything of stock and share broking transactions. The Glasgow warrant market is in most respects like the stock exchange, with the exception—an important one—that for every warrant issued there exists an actual tangible tonnage of iron, whereas gentlemen on the stock exchange do not infrequently buy and sell hundreds of thousands of pounds worth of scrip and stock without being possessed of any at all. The iron speculators, however, are not entirely confining the sphere of their operations to Glasgow and Scotland, but in most parts of the country there is at present a good deal of quiet negotiation and finessing between producers and users which is in reality speculation, having for its "contingencies"—otherwise profit or loss—the course of trade. One class is speculating on another's chances, and so on throughout; but when reduced to the narrow points of the issues raised, there seems to be singularly small ground for any particular jubilation on our part up to the present juncture. Some branches of the iron trade are without doubt better employed, and the prices of raw materials are advancing, but I have, so far, been almost unsuccessful in tracing out any solid stimulation of the manufactured iron branches. Now, until we begin to sell our manufactured iron more freely, I do not clearly see what we are going to make out of the spurt. I may be wrong, but I confess that I don't think it will pay us to depend solely, or even largely, upon our exports of raw materials for subsistence and profit. Unless we can sell our materials and our labor jointly we shall remain in an unprosperous condition as a nation, and shall not, in fact, long retain our present position as the largest manufacturers in the world. So soon, therefore, as the finished iron trade begins to show symptoms of the change for the better which has already lifted up the other branches, I will apologize to my friends, the extreme optimists, and "come down" to save the trouble of being shot at. The most imperturbable and placid of observers, nevertheless, cannot fail to notice on all sides signs and tokens of some expected alteration. Rendered desperate and almost moneyless by the long depression, there are scores of manufacturers in almost every department who are "hanging on by their eyebrows," and who will make the utmost

of any apparent revival by plunging all around on the "man or mouse" principle. Unless the demand is on a sound and wide basis, therefore, it will immediately be overtaken and upset.

THE INSTITUTE MEETING

held at Liverpool during the week has commanded some trade attention, but I cannot honestly say that the indoor proceedings have been a notable success. The discussions—as reported in the usual full and complete account given by the *Ironmonger*—do not appear to have been excessively lively, nor were the second and third days' assemblages numerically heavy. The excursions up and down the river, the visits to and luncheons, &c., on board the steamers, inspections of iron and steel works, soirées, conversations, and so on, went along quite gaily—indeed, the majority of the members appeared to think there was no especial fun or profit in crowding to listen to dry papers, when they had the opportunity of skimming about in an *à fresco* manner, not available every day in the year. The opening business was transacted on the Wednesday in St. George's Hall, when the Institute was welcomed to the town by the Mayor of Liverpool, Mr. Royden, who is a shipbuilder. His worship hit the nail square on the head by expressing a hope that the deliberations of the visitors might tend to the improvement of the processes and materials applied to shipbuilding. The president, Mr. Williams, fairly retorted with a *tu quoque* when he said, in effect, that the application of steel to shipbuilding was hindered simply because the authorities specified boiler-plate qualities of that material as compared with the low-grade iron now generally made use of. This little passage of arms exchanged, the scrutineers reported that 88 new members had been elected, making the number on the books considerably over 1000. For an institution not more than ten years old this shows a very steady rate of progress. The paper of Monsieur Poncelet, of Terroire, on "Dephosphorization of Iron and Steel," was the first on the agenda, and in the absence of the author was read by the secretary, M. Poncelet, as you will notice, did not beat about the bush at all shyly, but hit out from the shoulder with much vigor in one or two passages. His remarks on the Sherman process will perhaps be angrily perused by some persons in the United States. He calls Mr. Sherman's plan "the height of empiricism" and an "innocent bit of humbug." Mr. Brown, of Ayr, read a paper in which he announced his conversion of the "enemy" phosphorus into a "friend" by means of bichromate of potash. He was very much in earnest about his pet, and gave several good examples of its success, the excellent tool steel made by it, and mentioned the names of some respectable houses who had tried it with favorable results. An American gentleman, Mr. Henry C. Bull, whose paper had arrived too late to be classified, put forward another idea in these few words: "This process consists in the elimination of phosphorus by converting it into phosphuretted hydrogen, and the same chemical reactions take place that occur in the laboratory when phosphuretted hydrogen is produced for experimental purposes by any of the well-known chemical formulas. In carrying out the process in the Bessemer converter, steam is forced through the molten iron after all the silicon, manganese and carbon are removed. The steam is decomposed, some of the iron is oxidized, and the free hydrogen in a nascent state combines with phosphorus, forming phosphuretted hydrogen. I prefer to carry out the process in a Siemens or other similar furnace, and then the molten iron, mixed with as large a percentage of roll or hammer scales as is produced in the works, is subjected to strong oxidizing flames impinging on the surface, while a jet of steam is forced through it—preferably through the tapping-out hole—the silicon, carbon and manganese are oxidized by the joint action of the steam, free oxygen of the flame and the oxygen of the roll or hammer scales. When the iron is free from silicon, carbon and manganese, and not till then, the steam is decomposed by the iron and phosphuretted hydrogen formed. I am well aware that various persons have proposed to use steam to purify iron, but they did it without having a definite object to attain, and never under conditions suitable to bring about the entire elimination of phosphorus. Phosphuretted hydrogen is formed only when the metal is oxidized by water or steam; the nascent hydrogen then set free combines with the phosphorus. Steel is made by the addition of carbon, &c., in the usual way." I haven't the pleasure of Mr. Henry C. Bull's acquaintance, but I congratulate him from the bottom of my heart upon his Grant-like oratory. If he has time to enter upon a crusade against long speeches in this country, I feel convinced he will be supported—and ultimately buried in the Valhalla—by every newspaper man here. Criticism on the three dephosphorization papers was taken en bloc. Mr. Windsor Richards, of Bolckow, Vaughan & Co., proved M. Poncelet to be wrong, and gave details showing the successful working of the Thomas-Gilchrist process at Eston Works. Mr. Snelus, Dr. Siemens and other authorities also "sat upon" Mr. Poncelet. Mr. Brown's process was dubbed "the revival of a very old friend," and Mr. Bull was assured his idea was not new—besides which the metal would be so much cooled by the steam that it could not be worked subsequently with success. Mr. Lowthian Bell, in his capacity as a director of the Northeastern Railway, gave excellent accounts of the tests passed by rails made from Cleveland Pig, some of the samples having not more than .04 per cent. of phosphorus, or as low as the best rails made from hematite iron. Next day a rather commonplace paper by Mr. Picton, of Liverpool, was read, and, rather singularly, excited the best discussion of the whole gathering as to the use of and tests for steel. Dr. Siemens naturally made a very firm stand for mild steel, of which he is by common consent the guide, philosopher and friend, and in opposition to all the other speakers advised the shipbuilders and surveyors rather to increase than diminish the severity of their tests. Mr. Wrightson's valuable, but very long paper, on the physical changes occurring in iron and steel at very high temperatures was read, but discussion

upon it was postponed until the next meeting, which will be held in London in the ensuing spring. On the third (and last) day of the session several papers were hurried through, principal among them being one by Mr. Ratcliffe, of the Mersey Steel and Iron Works, on the manufacture of large forgings and materials for them. A proposal was made that the papers should be distributed a week before the meeting, and this was received with great applause, but the president seemed to think that the adoption of that clause would tend to keep members away from the meetings. The invitation of the managers of seven or eight German iron and steel works to hold the next (1880) autumn meeting at Düsseldorf was accepted, but some remarks have since been made (and published) commenting on the absence of Herr Krupp's name from the signatories of the invitation. Krupp always sends two or three of his staff over here to the meetings and to visit the works which are thrown open; but it is now alleged that he is artful and selfish enough to desire to keep his own preserves private. I scarcely think that is so, because I know gentlemen who have been over Essen within the last few years, and where one man goes surely 20 others may follow.

ENGLISH AND AMERICAN IRON AND STEEL WORKS.

Mr. Isaac Lowthian Bell, M. P., has addressed some remarks to Mr. Thomas Brassey, M. P. (son of the "great" Brassey), in reply to the latter's inquiries as to the continued accuracy of the inferences made by Mr. Harris Gastrell in 1874. Mr. Bell says he has compared the cost for labor (in Bessemer work) in the two countries and finds a trifling difference on the ton of ingots in favor of this country at the present time. He proceeds: "Mr. Gastrell mentions the quantity of steel made at one blow as 5.3 tons. This week I saw in an English steel works a heat of 7.6 tons. I have, I think, in some of my reports admitted that up to 1876 the American steel makers, having laid down their Bessemer works with the light of our experience, were perhaps in advance of the older works in Great Britain. I challenge any steel maker, British or foreign, to show a plant superior, or even equal, to that recently erected by Mr. Richards for Bolckow & Vaughan, near Middlesbrough. I do not remember a single works in the United States where the pig iron direct from the blast furnace is taken to the converter in a fluid state. In Great Britain this is now considered indispensable to proper economy. At the present moment Bessemer pig iron is worth 60/ at 65/ per ton, and rails have been sold at less than 25. 10/ at works.

IRON RAILS

"In an iron rail mill the cost of labor could bear no comparison with ours in point of economy, owing to the extravagant rates paid to puddlers: The other branches are also highly paid, but not to the same extent. * * * The high cost of wages on a ton of rails, viz., \$23.05 per ton, confirms me in an opinion formerly expressed, that in the iron rail mills of the United States there is not the slightest proof of any superiority; indeed, I should say in point of general efficiency and economy we were far in advance. * * * I have looked over various memoranda as to blast furnaces, and I consider, in point of arrangement, no nation in the world can excel the best constructed works at Middlesbrough. I would invite you to go and inspect ours at Port Clarence. The railway locomotives travel over our works on elevated railways 40 or 50 feet high. You may assume five tons of raw material are consumed for every ton of iron made, and when we are at full work our daily make is equal to about 750 tons—equal to 3750 tons of coke to be received every day, Sundays included. The whole of this is received into bunkers, or into kilns for calcining, of such a construction that not one ounce is lifted by a shovel, the whole sliding or dropping into the changing wagons by gravitation. * * * The same facilities are to be found in other works in our neighborhood."

How is that for high, gentlemen? I have quoted Mr. Bell, because he is so well known among you, and because his opinions (hitherto unpublished, except in a volume just emerging from the press under Mr. Brassey's care) are of exceptional interest just now. That must be my apology for this long excerpt.

SCOTCH PIG IRON.

like the gentleman in the play, has been "going off it" since I last wrote to you. The Glasgow warrant market has apparently become delirious, for we are told that an enormous business has been done each day. Quotations for these paper securities are anything you like to mention. It is, however, quite wise to note that makers' brands are going up in price; that they are already several shillings dearer; that the restricted output continues; that the ironmasters have conceded their coal miners higher wages; that all available pig is going into store so as to be "converted" into negotiable warrants; that the shipments are very heavy; that the manufactured iron branches show signs of improvement, and that orders from the United States are still "pouring in"—to quote a phrase just published on the subject. John E. Swan & Bros. (Limited) show that there are now 311,727 tons in Connal's stores, an increase of 4360 tons on the week, against 195,238 tons last year this date. The furnaces in blast number 68. The shipments for the week show an increase of 7694 tons, or nearly 100 per cent. over the figures for the corresponding week of 1878. Importations of Cleveland pig are being renewed on a very large scale into Scotland, which may tend to upset the speculations of the Scotch ironmasters. Ballast pig has jumped up to 45/ per ton alongside in the Forth or Clyde, and warrants have reached 5/7. Writing from Glasgow September 27, James Watson & Co. said: "The improvement which we reported in our last has not only been supported, but a further rapid advance has taken place, a very large business being done in all the various brands as well as in warrants. On Monday the market was excited with extensive transactions from 50/ at 52/ per ton. On Tuesday the price sprung from 52/ at 55/ per ton, closing at 54/6 per ton. On Wednesday forenoon, the price touched 55/6, declining

however, to 53/7½ in the afternoon and closing at 54/4½ per ton. Yesterday an immense business was done from 55/ at 55/7½, while to-day it has been irregular, opening at 56/6, cash, relapsing to 55/6 and closing with buyers at 56/1, cash, sellers asking 56/1½ per ton. The shipments last week were 15,650 tons as compared with 7956 tons for the corresponding week of 1878." We quote:

G. M. B., at Glasgow.	No. 1.	No. 3.
Gartsherrie, "	37/	35/6
Coltness, "	63/	54/6
Summerlee, "	61/	54/6
Langloan, "	60/	54/6
Carleton, "	60/	54/6
Calder, at Port Dundas, "	62/6	55/
Glenarnock, at Ardrossan, "	64/	55/
Eglington, "	59/6	54/6
Dalmellington, "	58/6	54/6
Shotts, at Leith, "	60/6	54/

The Scotch market is almost wholly bare of scrap and old rails.

CLEVELAND PIG IRON

being in demand from your side, it may interest some of your readers to have the following quotations for pig made in that district:

G. M. B.				
No. 1	Foundry	43/6	Mottled	38/6
"	"	41/6	White	37/
"	"	40/	Refined metal	59/
"	"	39/6	Knudde	45/6
"	4 Forge	39/		

All net cash and delivered f. o. b. at makers' wharves in the Tees.

Your demand seems to run on No. 4 forge and mottled.

THE BIRMINGHAM NUT AND BOLT COMPANY is reported to have suspended payment. The largest creditors have been consulted, and a scheme is in course of elaboration for paying 10/ in the pound on all claims forthwith, and discharging the other moiety by the creation of 6 per cent. preference shares. You must not confound this concern with two or three other establishments with almost similar titles.

MR. DAVID MACIVER, M. P.

In writing to the *Ironmonger* on "Free Trade and Reciprocity," says, characteristically: "My connection with the Cunard Company ceased some half a dozen years ago; but I have still some steamers, and I know, as a carrier, that there are again considerable shipments of various kinds to the United States. But I see a good many old rails going for remanufacture, and also a good deal of spiegel iron and other raw materials, and I do not think this indicates a healthy export trade. I know, of course, that our American friends are also taking some steel rails from us; but I have some reason to believe that our manufacturers are not getting much profit out of these transactions, and I know that the steamer that carries the rails gets none, and has to make her receipts out of the homeward voyage. In my judgment, therefore, so far as the metal trades are concerned, profitable business as regards finished articles is nearly at an end—not permanently, perhaps, but certainly while we remain the infatuated theorists that we are, and are willing to purchase anything and everything that anybody likes to send us, without any endeavor to make a bargain for reciprocal trading advantages." I think Mr. Maciver is about the most wholesome reciprocity man we have in this country. "Infatuated theorists" seems to be "up against" the Cobden Club people, doesn't it?

AMERICAN VERSUS ENGLISH PLANES

are thus very plainly written about by a Birmingham correspondent, who evidently knows whereof he speaks: "Some little excitement has been newly caused in this branch by the advances of American competition, which, unless promptly met by the adoption of suitable labor-saving machinery, threatens to sweep away the whole of our once flourishing colonial trade in planes. The other day a local mercantile firm, having obtained special terms from some of the Birmingham manufacturers, quoted to one of the largest houses in Montreal the low price of 40 per cent. discount for English planes. The reply was as follows: 'We have yours of August 23, quoting planes at 40 per cent. This would make the cost of 40 planes 3 2/3, net, or 77½ of our money. We can buy the best American planes, nearly equal in quality to English, at 30½. These are subject to 25 per cent. duty here. We can also buy planes made in Canada from English beech and with English irons—a first-rate article—at 52½. So you will see that English planes are quite too dear for this market, as they would cost us 97½ duty paid.' English plane makers are naturally skeptical about the quality of the goods which are sold at half the prices of English planes, but there can be no question as to the bona fides of the Montreal house or the accuracy of the prices quoted."

THE IRON AND HARDWARE TRADES

of the whole country are improving slowly, the most decided spurt having so far been felt in the smelting branches. In all directions pig is dearer and common bars are moving upward. Hitherto, however, vendors of general manufactured wares have not been able to sell in any marked advantage. At Sheffield and in Birmingham the light industries are doing more work, but selling prices are still unprofitably low.

FOREIGN.

FRANCE.

(Moniteur des Interests Matériels.) PARIS, Sept. 28, 1879.—Metals.—We are now approaching the active fall season, and under favorable auspices. Copper.—Chili Bars have, however, given way 7½ the 100 kilos. Ingot, 1 franc, and Best Selected, 2 francs. We quote Chili Bars, 152.50 @ 153; Ingots, 150; Best Selected, 162.50, and Corcoro, 155. There has also been a slight decline at Marseilles. They quote small refined ingots, 162; Sheet Copper, 175; ditto Bolts, 185; Yellow Metal Sheathing, 170, and Copper ditto, 185. Tin has become somewhat irregular. There has been an advance of 1 franc in Straits and Australian, and a decline of 2.50 francs in Billiton. We quote Banca, 104; Billiton, 100; Straits and Australian, 103.50, and English, 102.50. Speculators have been realizing at Marseilles and there has been a decline of 3 francs. They quote Banca, French and English, 102, and Straits, 103. Lead.—This metal shows uniform strength. We quote the various sorts, 38 @ 39, and Manufactured, 40. Marseilles is quiet but firm. They quote first and second fusin, 35 @ 37; Antimonial, 34, and Manufactures, 40 @ 40.50. Spelter.—There is uninterrupted firmness at a fresh advance of 1 franc. We quote Silesian, 50, and sheet Zinc, 65. Marseilles is firm without any further change. They quote Vieille Montagne Sheet, 63; other brands,

60, and Old Remelted, 57. Nickel in Ingots, 97 to 98 per cent., sells at Paris at 7 francs per kilo, and anodes at 10. Iron.—Business in this branch has continued to improve in this city. There is a brisk demand for Flooring iron and great scarcity. The forges are slow in filling orders, and a good many stores are deprived of stock. In a small way Flooring iron sells as high as 10.50 francs the 100 kilos. Merchant iron is less firmly held and some shading resorted to in order not to miss business. The month of September has not quite come up to expectations in the Haute-Marne, but they have still a good many orders on hand to keep them a going. From the Meurthe and Moselle district we hear that the Nancy producers will get up a syndicate the same as the Longwy makers have done. Affinage Pig sells in that locality for 33 @ 34 francs at the works. Advices from the Rhone and Loire basin are not satisfactory, there being still a scarcity of large commands. On taking a more general view of the state of affairs in the iron branch in France, however, it cannot be denied that the improvement which has taken place in England has had a favorable effect in our country. Prices, it is true, have risen but slightly, but there is unmistakably a greater readiness to operate. In the Ardennes the rolling mills take orders at 16.50 @ 17 francs, which is still comparatively low and little remunerative, but Sheet Iron is selling better, and the same may be said of plates and nails. Hardware is neglected. In the Haute-Marne some Sheet Iron orders have dropped in; they sell mixed iron at 120 @ 120, and machine at 120 @ 125 for No. 30. Gray Pig Iron Stoves and railroad material we hear, at the close, began to look up in the district, while hollow-ware calls little attention. At the North the receipt of orders is steady, and prices are sustained. Rails have been sold at 150 francs per ton, delivered at the Valenciennes depot. For heavy ironwork prices are well sustained, even in the Rhone and Loire basin above alluded to. Coal.—There is a gradual revival in the demand for domestic coal, and as soon as the weather ceases to be warm, we shall witness increased activity therein. At the North and in the Pas-de-Calais there is a good demand for industrial coal, and shipments from the St. Etienne mines have been unusually brisk. Prices are steady.

BELGIUM.

(Revue Universelle.)

BRUSSELS, Sept. 28, 1879.—Iron.—There is a remarkable degree of firmness; orders sent to the rolling mills, during the week under review, have been on an increased scale, particularly those for abroad. At Liege merchant iron has improved between 25¢ and 1 franc the 100 kilos; the same at Charleroi where there has been an advance of 1 franc. Those forges in Belgium, whose former contracts have secured them a good supply of pig iron in Luxembourg, are in an enviable position. The Coal Society has its hands full of Steam orders, and, having made important improvements in its machinery at Seraing, is well prepared for the future to meet all demands. Thin Sheet Iron and for boilers enjoys an increased demand in the first place for Russia, and in the next for Holland, both of whom are our best customers. The Esperance Forges, at Liege, are unusually busy, and prices are firm. At Charleroi there has been great activity, stirred up since the demand for Old Rails for American account manifested itself. These purchases for America are quite considerable, and 85 francs are readily paid for these rails. Most of our works have got orders on hand to last them till January, and there has been no occasion to establish much of an advance yet, the revival still being of recent date, but after a while the urgency of the commands and the rapid improvement in prices elsewhere will cause our makers to raise their pretensions very materially. In the Grand Duchy of Luxembourg, Pig Iron has advanced 25¢, and producers decline entertaining any business proposals for the remainder of the year. The assembled representatives of German foundries and forges at Mannheim agreed to raise prices a mark the 100 kilos. Coal.—Coal for these rails is a little higher, but German competition keeps down industrial coal.

GERMANY.

(Borsenhalte.)

HAMBURG, Sept. 27, 1879.—Metals.—Business has been slowly improving, and some leading iron works have agreed to raise prices so as to place them on a level with those in the principal producing countries in our neighborhood. Metals have followed by degrees the rising tendency in England and elsewhere, and after a while the advance thus obtained may gain in steadiness. Copper is firm at 65 @ 67 marks the 50 kilos, at Berlin, and 65 to 66 here. Much will depend on the success of the speculation now developing in England, and our market will be ruled accordingly. Tin.—In spite of the by no means favorable statistical position of England and Holland, the speculators for a rise have succeeded in those countries in pushing up prices still further. The quotation in Berlin is 75 to 80, and here we quote the various sorts 75 to 81. Lead.—This metal is less buoyant than the preceding ones, yet it does not lack strength. The quotation at Berlin is 15.25 @ 15.50, while here English Pig commands 17; German ditto, 14.50 @ 14.75, and Spanish, 18.25 marks the 50 kilos. Spelter remains firm from actual scarcity. Breslau is steady at 18.50, while here and at Berlin 20 marks remains the ruling rate, with little doing because of the diminished supply, and little prospect of increased abundance for some months to come.

AUSTRIA.

(Trade Journal.)

VIENNA, Sept. 28, 1879.—Metals.—The recent animation in iron has relaxed into a less buoyant mood after the more immediate wants of consumers have been attended to. Prices of all other metals have continued to look up, with the exception of those of Copper. Much of the advance obtained has been due to speculation. The impulse to this upward tendency was given by Tin and Spelter. While Tin was pushed to higher values speculation, in the case of Spelter it has, on the contrary, been legitimate consumption, which has produced a solid advance. Available Spelter is largely procurable, and purchasers have to buy a long time ahead. Some incipient speculation has meanwhile manifested itself in England in Copper likewise, and would have developed at Vienna but for the large amounts of old Copper accumulated at this center. We quote Refined Manufactured, 71 florins the 100 kilos; Fine "Booster," 73; and Block Copper, 65. After having been neglected for a long time, Lead has lastingly attracted attention both in Austria and abroad. The low price has induced large purchasers here. The government soft Lead which has come to be sold here this season has been all absorbed by the army and by purchases for consumption and speculation. We quote good Austrian soft Lead, 17.50 @ 18 florins; Helberg, 17.75 @ 18.25, and Silesian Soft Lead, 17.75 @ 18.50 florins the 100 kilos.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Sept. 30, 1879.—Tin.—Banca has from 43 guilders the 50 kilos. Improved to 43.50, while Billiton, after rising from 42.25 to 42.75, has sold at the close at 42. The following are the stocks on hand in the hands of the Netherlands Land Trading Society: Banca, 101,607 slabs, against 84,411 last year, and Billiton 4134, against 5105. The September deliveries have been 10,492 slabs Banca and 100 Billiton, against 9008 and 100 last year. The deliveries from January 1 to October 1 have been 104,117 slabs Banca and 3217 Billiton, against 87,395 Banca and 2954 Billiton during the same period of last year. There are about from Banca on hand in the hands of the Society 1,000,000 slabs of salting vessels 800 piculs, against 400,000 last year. The September deliveries of Billiton Tin from private importers' hands have been 5000 slabs, and from January 1 to October 1 24,839 slabs. Stock of Billiton here and at Amsterdam 70,028 slabs; afloat, 30,410 slabs.

EAST INDIES.

(Giffill, Wood & Co.)

SINGAPORE, Aug. 26, 1879.—Tin.—The market was very firm all last week, closing at \$20.80 per picul, but now the feeling is weaker, owing to lower prices in London. There is still some demand for China, and 20 tons of a favorite brand fetched \$21.15 per picul. The shipments to New York during the past fortnight comprise 70 tons, by direct steamers Benary and Aegean, 60 tons by the mail steamer via London, and 50 tons transhipped from Penang, in all 180 tons. Freight.—For London rates are unchanged at 25/ and 27/6, but for Liverpool, shippers have had to pay 27/6

for deadweight. For New York the Coringa and W. H. Thornhill have cleared without any tin on board. The Bhotan gets on slowly with her loading and the Ringleader has been fixed to succeed her at 20/ for deadweight. For Boston the Chocoma continues her loading. Exchange has been pretty steady during the past fortnight and closes firm at 3/9½ for six months' sight credit drafts on London.

(Dummler & Co.)

BATAVIA, Aug. 23, 1879.—Coal has been in very active demand, and for arrived cargoes as much as 30 guilders has been made for Australian as well as for English. Distant shipments are not required for and could only be placed to a limited extent at 21 @ 22 guilders for Cardiff. Petroleum.—Contrary winds keeping back fresh arrivals, the value on the spot has been well maintained, and for retail prices of 6 to 8 guilders have recently been obtainable. There is also some speculative inquiry for near cargoes and 5 guilders has been bid and refused for 30,000 cases. With a change of wind quite a fleet of Petroleum ships may, however, be looked for, and considering the additional enormous shipments made recently, and the bad state of the market, in the neighboring ports, we must be prepared for considerably lower prices. Exchange.—Rates have remained pretty steady throughout at 11.97½ @ 12 guilders per 6, six months' sight on London.

During one of the long periods of business stagnation years ago, a worthy manufacturer by the name of Crofts had a pretty hard time of it. A friend meeting him one day after quite a revival in trade, found him in excellent spirits. He explained it as follows: "Buyers have been calling me John for several years, but now they call me Mister Crofts."

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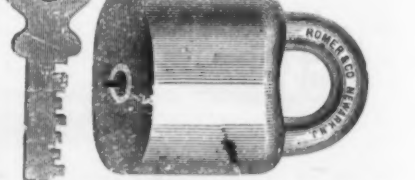
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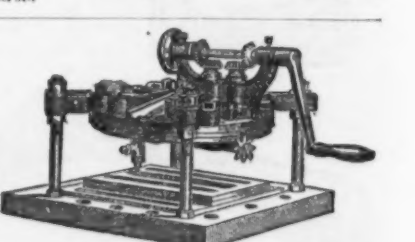
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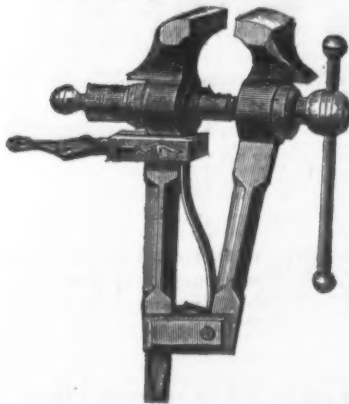
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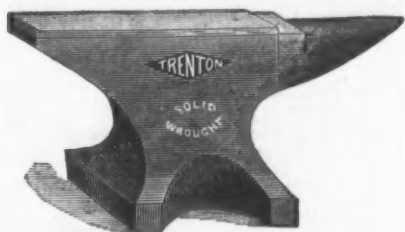
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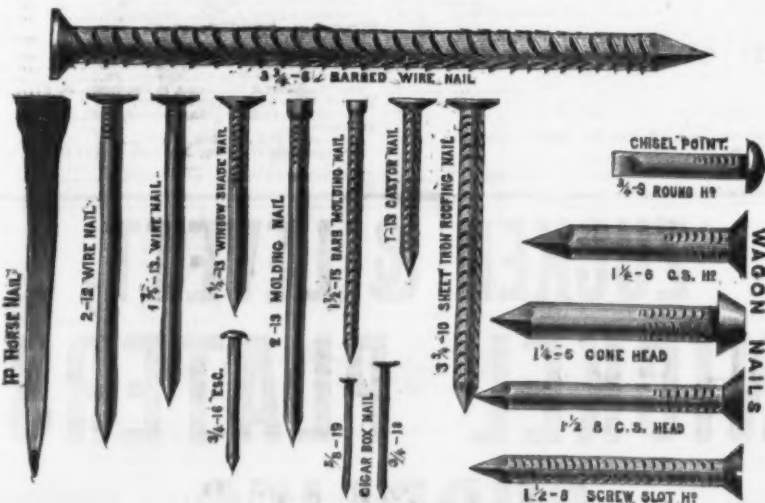
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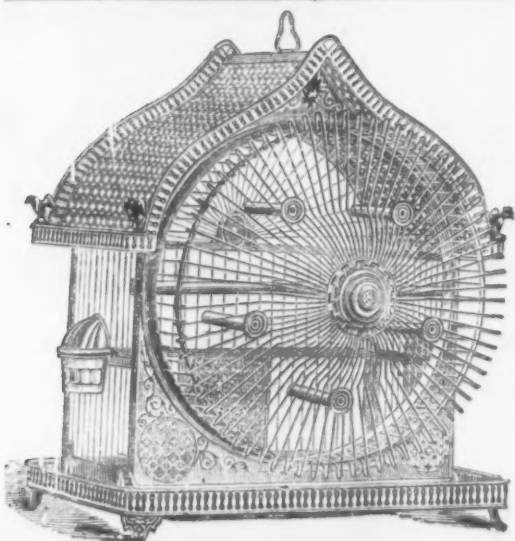
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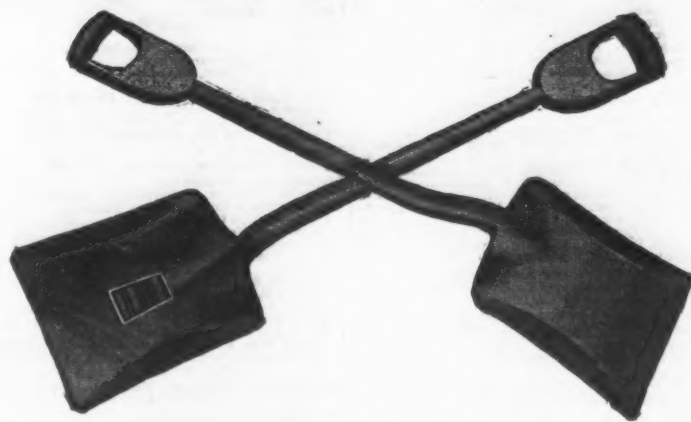
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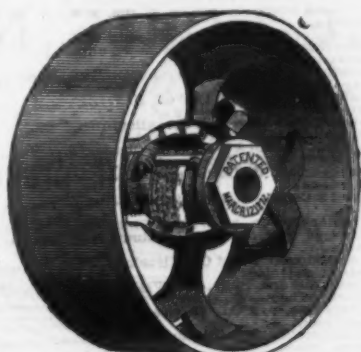
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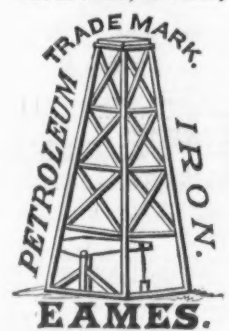
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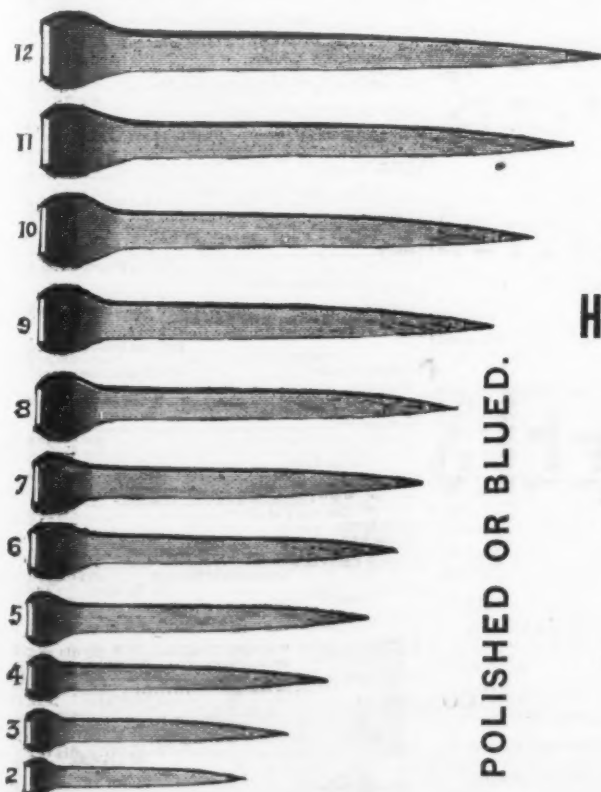
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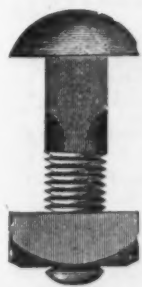
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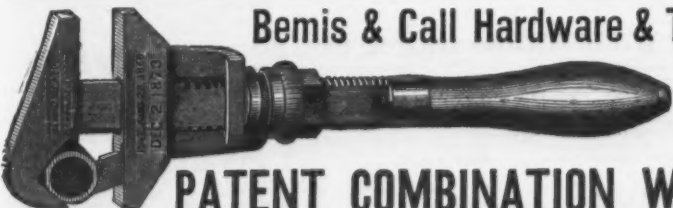
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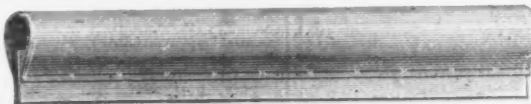
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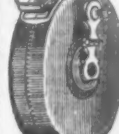
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Importers of IRON & STEEL, WIRE RODS, &c
Sole Agents for COCKER BROS., Limited, Sheffield, England.

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Cast Steel, Wire, and "Meteor" Wire Plates.
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Successor to JOSHUA MOSS and GAMBLE BROS.
80 JOHN ST., NEW YORK.

STEEL AND FILES,

Hammers, Anvils, Vises, Blacksmiths' Tools.
WARRANTED CAST STEEL. Specially adapted for Dies, Punches,
Turning Tools, Drills, &c.
ALSO, THE WORLD-RENOVED

IMPROVED MILD CENTERED CAST STEEL.
Specially adapted for Taps, Reamers, Milling Tools, &c. Warranted
not to crack in hardening Tools of any size.

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Phila.—J. S. Watson & Son, Agents, 512 Commerce St.,
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Pittsburgh, Pa.,
Manufacturers of

CRESCENT STEEL,

In Bars, Sheets, Cold-Rolled Strips, &c.
Polished, Compressed Drill Rods and Wire,
Warranted equal to any imported in quality, finish and accuracy.
Also Common Grades.

Established 1810.

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Manufacturers of the "Celebrated"
"DOG BRAND" FILES.

Also of Superior

STEEL

For Drills, Cold Chisels, Tools, Taps, Dies, &c.

COLD ROLLED STEEL for Clock Springs, Corsets, &c.

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BESSEMER STEEL

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Iron Rail and Fastenings,

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WIRE OF ALL KINDS,

Steel Horse Shoes, Tire, Axles and other Forgings,
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A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

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And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS.

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Also Springs, Axles, Rake Teeth, &c.

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FOREST CITY STEEL CO.,

Manufacturers of Best Quality

Crucible Steel for Drills, Taps, Dies, Tools, Mill Picks, &c.

Testimonial of D. J. Jones, Roll Turner, Cleveland Rolling Mill Co.

"I have been testing the steel on chilled iron rolls along with the best English and American steels,
and find it superior to any of them in every respect."

Samples furnished for trial. Quality guaranteed equal to any.

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R. MUSHET'S
Special Steel

FOR

LATHES, PLANERS, &c.

Turns out at least double work by increased speed
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Steel. Neither hardening nor tempering required.

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Used for refining and temper-
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Increases their durability at
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Secures absolute safety from
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Send for circular to

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Berea, O., Nova Scotia, & other brands
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Manufacturers of

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GRINDSTONES.

BOYD & CHASE,
The largest manufacturers in the world of
OIL STONE

Of all description.

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Berea, O.,
Black River, O.,
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GRINDSTONES,

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GUNPOWDER.

DUPONT'S

Rifle, Sporting and Blasting Powder

The most popular Powder in use.

Dupont's Gunpowder Mills, established
in 1801, have maintained their great reputation
for 78 years. Manufacture the following cele-
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DUPONT'S DIAMOND GRAIN,
Nos. 1 (coarse) to 4 (fine), unequalled in strength, quick-
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Pigeon Shooting.

DUPONT'S EAGLE DUCKING,
Nos. 1 (coarse) to 3 (fine), burning slowly, strong and
clean; great penetration; adapted for Glass Ball,
Pigeon, Duck and other shooting.

DUPONT'S EAGLE RIFLE,
A quick, strong, clean Powder of very fine grain for
Pistol shooting.

DUPONT'S RIFLE, Fg. "Sea Shooting,"
FFg and FFFg.—The Fg for long range rifle shoot-
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Also all kinds of Sporting, Mining, Shipping and
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grades for expert. Also, Musket, Cannon, Mortar
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Powder manufactured to order of any required grain
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N. B.—Use none but Dupont's Fg or FFg Powd-
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No. 22 Murray Street, New York,
Manufacture and sell the following celebrated brands
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ORANGE LIGHTNING,

ORANGE DUCKING,

ORANGE RIFLE

more popular than any Powder now in use.

Blasting Powder and Electrical Blasting

Apparatus.

Military Powder on hand and made to order.

SAFETY FUSE, FRICTIONAL & PLATINUM

FUSES.

Famphlets showing class of grain sent free.

Steel.
THE EDGAR THOMSON STEEL CO.,
LIMITED.
MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.
New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.

The Company warrants its rails equal in quality to any manufactured in the United States. Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

Branch Office and P. O. Address, No. 48 Fifth Ave., Pittsburgh, Pa.
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BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

THE TRADE MARK, IN ADDITION
TO THE NAME,
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY
JOHN WILSON.



GRANTED A.D. 1766, BY THE
CORPORATION OF CUTLERS OF SHEFFIELD,
AND PROTECTED BY ACT OF PARLIAMENT.
WORKS:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

BUYERS ARE SPECIALLY CAUTIONED AGAINST
IMITATIONS OF THE MARK, AND THE
SUBSTITUTION OF COUNTERFEITS
BEARING THE NAME, "WILSON," ONLY.

North Chicago Rolling Mill Co.

ESTABLISHED 1857. CAPITAL, \$3,000,000. INCORPORATED 1869.
Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF
MERCHANT BAR, FISH PLATES, PIG METAL,
IRON RAILS & BESSEMER STEEL RAILS.

Fish Plates.....	20,000 tons
Merchant Bar.....	40,000 "
Pig Metal.....	80,000 "
Iron Rails.....	80,000 "
Steel Rails.....	80,000 "
Total Capacity per year.....	280,000 "

OFFICES:
17 Metropolitan Block, Chicago, Ill.
37 Mitchell Block, Milwaukee, Wis.

O. W. POTTER, President, CHICAGO.
S. P. BURT, Vice-President, NEW BEDFORD.
S. CLEMENT, Treasurer, MILWAUKEE.
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PYROLUSITE MANGANESE COMPANY,

MINERS, DEALERS AND EXPORTERS OF HIGH TEST

Crystallized Black Oxide of

Manganese

IN CRUDE STATE.

Suitable for the manufacture of Ferro-Manganese, Spiegeleisen, Bessemer Pig, &c. Also, fine ground and granulated, especially prepared for

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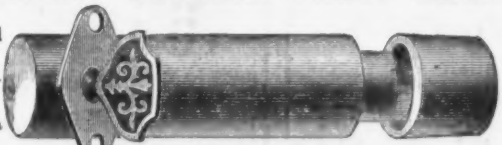
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Standard Barytes, Gritless Ochre, Borate of Manganese, &c.

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Can be applied
wholly by bor-
ing, and is a
sure protection
against burglars
or traps.



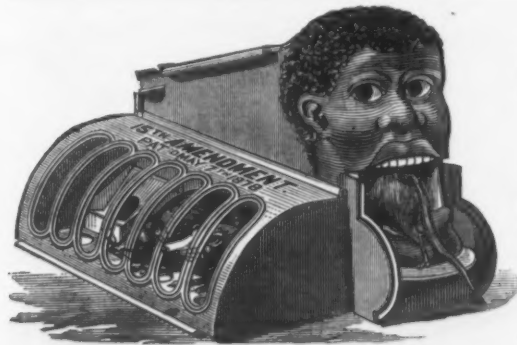
MY NEW DOOR BOLT,

in Nickel plate or Bronze, is designed for both out and inside doors, your sleeping or bath-room, throughout a hotel, or on any door that may need inside bolts. It will take the place of the more common Flush or Barrel Bolt, being as easy to apply, leaving your door more secure and of better finish, and besides it fills the place of many a more expensive Bolt that operates no better or any more secure.

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MOUSE TRAP,
SELF SETTING.**

Is a perfect Mouse Catcher and
Comical Toy combined.
Most saleable article in the market.

M. A. HUNT MFG. CO.,
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Sole Manufacturers.

Sold by all jobbers of Hardware
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FERNALD & SISE,
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S. E. Cor. Twelfth and Noble Sts., PHILADELPHIA.

GENUINE BABBITT,

Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

ALL GRADES OF ANTI-FRICTION METALS.

DEOXIDIZED BRONZE,

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals, Solders, Stereotype Metal, Gas and Steam Fittings and Fixtures, Brass and Composition Castings.

Send for circulars.

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French Points, Window Shade Nails,
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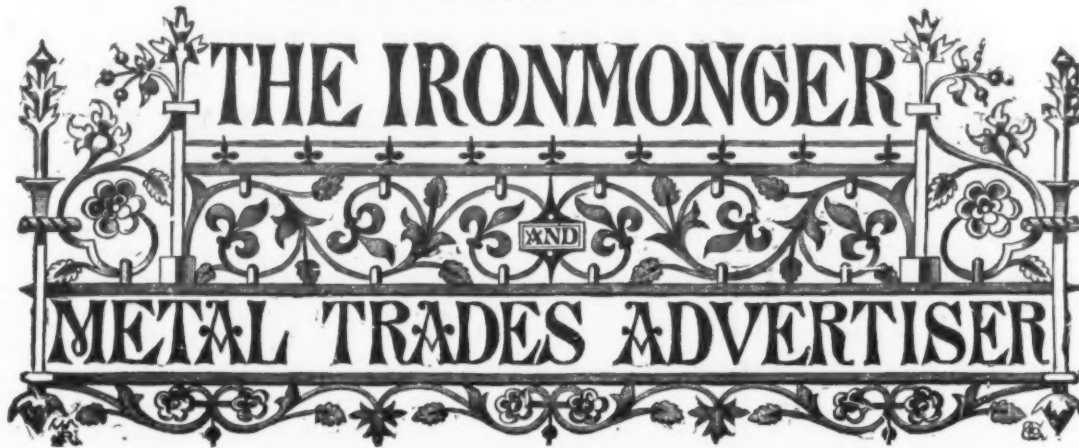
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Electrotype, Barbed Caster Nails,
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Vener Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages: 1 lb. papers, or as wanted.

AMERICAN WIRE NAIL CO.
Factory, Fifteenth and Madison Sts. COVINGTON, KY.

ESTABLISHED IN 1859.



PUBLISHED EVERY SATURDAY.

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OFFICE: 44a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY

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Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.

Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. *The Week*, *Legal Notes*, *Trade Notes*, *Bankruptcies*, *Foreign Notes*, *Colonial Jottings*, *Merchants' Circulars*, *Imports and Exports*, &c., are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

SUBSCRIPTIONS

to the *Ironmonger* and *Metal Trades' Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is \$5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful *Ironmongers' Diary and Text Book*, a work sold to non-subscribers at 75 cents.

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THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, presented free to every Subscriber to the *IRONMONGER AND METAL TRADES' ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

Is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication in 1879 will be as follows:
JANUARY 11, FEBRUARY 8, MARCH 8, APRIL 5, MAY 3 and 31, JUNE 28, JULY 26, AUGUST 23, SEPTEMBER 20, OCTOBER 18, NOVEMBER 15, DECEMBER 13.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach of the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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Advertisers will do well to use illustrations freely. Where economy of space is an object, a left page illustrated and described, in one language, can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.

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Established 1845.
Office foot of Houston Street, East River,
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Successor to
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Stove Linings,
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Manufacturers of
FIRE BRICK
And Furnace Blocks
DRAIN PIPE & LAND TILE.
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Successors to
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ARCHITECTURAL TERRA COTTA

AND
FIRE BRICK.
170 Broadway, NEW YORK.

Brooklyn Clay Retort

AND
FIRE BRICK WORKS.
Manufacturers of Clay Retorts, Fire Bricks, Ga.
House and other Tile, Cupola Brick, &c. Dealers in
and Miners of Fire Clay and Fire Sand. Clay bank at
Burt's Creek, New Jersey. Manufacture: Van Dyke,
Elizabeth, Richards and Partition Sts., Brooklyn, N. Y.
Office No. 88 Van Dyke St.

Watson Fire Brick Manufactory

ESTABLISHED 1836.
OHNE. WATSON, Perth Amboy, New Jersey.
Manufacturer of
FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries,
Gas Works, Lime Kilns, Tanneries, Boiler
and Grate Setting, Glass Works, &c.
FINE CLAYS, FIRE SAND, AND KAOLIN FOR SALE.

HENRY MAURER,

Proprietor of the
Excelsior Fire Brick & Clay
Retort Works,
Manufacturer of FIRE BRICK, HOLLOW
BRICK AND CLAY RETORTS.
WORKS: PERTH AMBOY, NEW JERSEY
Office & Depot: 418 to 422 East 23d St., N. Y.

TROY FIRE BRICK WORKS

Troy, N. Y.,
JAMES OSTRANDER & SON,
ESTABLISHED 1846,
Manufacturers of
FIRE BRICK,
Tuyeres, Tiles, Blast Furnace Blocks, &c. Miners and
Dealers in Woodbridge Fire Clay and Sand, and Staten
Island Kaolin.

GARDNER BROTHERS,

MANUFACTURERS OF
STANDARD SAVAGE
Fire Brick, Tile & Furnace Blocks,
OF ALL SHAPES AND SIZES.
Clay Gas Retorts and Retort Settings,
AND
Miners and Shippers of Fire Clay.
Office: 375 Penn Ave., Pittsburgh, Pa.
WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

BORGNER & O'BRIEN,

Manufacturers of
Fire Bricks,
Clay Gas Retorts,
Retort Settings,
Tiles, Blocks, &c., &c.
23d St., below Vine,
PHILADELPHIA.

Eighteen years' practical experience.
CYRUS BORGNER. WM. J. O'BRIEN

MILLER'S BRICK PRESSES

(Established 1844).
FIRE and RED BRICK,
And Brickmakers' Tools in General.
SAM'L. P. MILLER & SON,
309 South 5th St., Philadelphia.

W. & J. TIEBOUT,

Manufacturers of
Brass, Galvanized & Ship
Chandlery Hardware,
No. 290 Pearl Street, New York.

"DRAW CUT"
BUTCHERS' MACHINES.
Choppers, Hand and Power
Stuffers,
Lard Presses,
and the BEST in USE.
BIRKBEY IRON WORKS,
Burlington, Iowa.

DUK'S IMPROVED ELEVATOR BUCKET.



THE STORE-HOUSE BUCKET.
(Partial straight front.)
In 12 in., 14 in., 16 in. and 17 in. Sizes.

Made of Best Charcoal Stamping Iron.
No Corners to Catch.
Light Running and Very Durable.
The only Scientifically Constructed Elevator Bucket
in the Market.



THE
MILL BUCKET.
In 3 1/2 in. to 10 in.
Sizes.

T. F. ROWLAND,

Sole Manufacturer,
CONTINENTAL WORKS, Brooklyn, E. D., N. Y.
Send for Circular.

NICHOLSON FILE CO., FILES AND RASPS.

Manufacturers of

Filers' Tools & Specialties.

Manufactory and Offices at Providence, R. I.

The following space will be used in illustrating our specialties, the matter being changed weekly.

IMPROVED BUTCHERS' STEELS.

Patented December 25th, 1877.



REGULAR STEEL.



PATENT STEEL.

We give herewith an illustration showing two forms of Butchers' Steels—the *Regular* and *Patent Steel*.

In the sharpening of knives two operations are assential: First, that of grinding or otherwise bringing the blade to a thin edge, after which it is to be whetted, or its edge finished down to a proper condition for cutting.

The *Patent Steel*, above illustrated, is designed to perform both of these operations, being provided with two oppositely located cutting or abrasive surfaces, and two oppositely located smooth or finishing surfaces; the object being, that the knife may be brought to an edge upon the abrasive surface, and by a slight turn of the wrist, the steel changed into such a position that the knife may be brought to bear upon the two finishing surfaces, without further change or trouble on the part of the operator.

In addition to the improved pattern, we make a steel from the same quality of stock, and of the same style of finish, which we call our *Regular Steel*, whose entire surface is *drawfiled* or *stripped*, after the manner of the well-known "Wilson Steel."

The steels are manufactured from a superior quality of stock, made especially for this purpose, and are finished and mounted in a style unequalled in this line of goods; the handles being enameled in imitation of horn, jet and rosewood. Every steel stamped with our brand is warranted hard and free from flaws.

We are now prepared to furnish the *Regular* or *Patent Steels*, in lengths of 10 or 12 inches, put in lots of one-half doz. each.

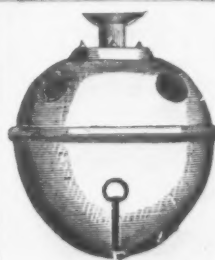
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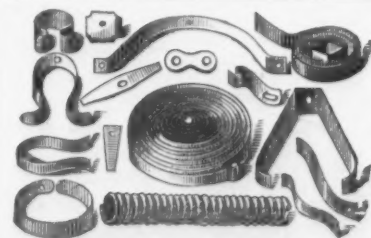
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114 1/2 1 115 1/2 1 116 1/2 1 117 1/2 1 118 1/2 1 119 1/2 1 120 1/2 1 121 1/2 1 122 1/2 1 123 1/2 1 124 1/2 1 125 1/2 1 126 1/2 1 127 1/2 1 128 1/2 1 129 1/2 1 130 1/2 1 131 1/2 1 132 1/2 1 133 1/2 1 134 1/2 1 135 1/2 1 136 1/2 1 137 1/2 1 138 1/2 1 139 1/2 1 140 1/2 1 141 1/2 1 142 1/2 1 143 1/2 1 144 1/2 1 145 1/2 1 146 1/2 1 147 1/2 1 148 1/2 1 149 1/2 1 150 1/2 1 151 1/2 1 152 1/2 1 153 1/2 1 154 1/2 1 155 1/2 1 156 1/2 1 157 1/2 1 158 1/2 1 159 1/2 1 160 1/2 1 161 1/2 1 162 1/2 1 163 1/2 1 164 1/2 1 165 1/2 1 166 1/2 1 167 1/2 1 168 1/2 1 169 1/2 1 170 1/2 1 171 1/2 1 172 1/2 1 173 1/2 1 174 1/2 1 175 1/2 1 176 1/2 1 177 1/2 1 178 1/2 1 179 1/2 1 180 1/2 1 181 1/2 1 182 1/2 1 183 1/2 1 184 1/2 1 185 1/2 1 186 1/2 1 187 1/2 1 188 1/2 1 189 1/2 1 190 1/2 1 191 1/2 1 192 1/2 1 193 1/2 1 194 1/2 1 195 1/2 1 196 1/2 1 197 1/2 1 198 1/2 1 199 1/2 1 200 1/2 1 201 1/2 1 202 1/2 1 203 1/2 1 204 1/2 1 205 1/2 1 206 1/2 1 207 1/2 1 208 1/2 1 209 1/2 1 210 1/2 1 211 1/2 1 212 1/2 1 213 1/2 1 214 1/2 1 215 1/2 1 216 1/2 1 217 1/2 1 218 1/2 1 219 1/2 1 220 1/2 1 221 1/2 1 222 1/2 1 223 1/2 1 224 1/2 1 225 1/2 1 226 1/2 1 227 1/2 1 228 1/2 1 229 1/2 1 230 1/2 1 231 1/2 1 232 1/2 1 233 1/2 1 234 1/2 1 235 1/2 1 236 1/2 1 237 1/2 1 238 1/2 1 239 1/2 1 240 1/2 1 241 1/2 1 242 1/2 1 243 1/2 1 244 1/2 1 245 1/2 1 246 1/2 1 247 1/2 1 248 1/2 1 249 1/2 1 250 1/2 1 251 1/2 1 252 1/2 1 253 1/2 1 254 1/2 1 255 1/2 1 256 1/2 1 257 1/2 1 258 1/2 1 259 1/2 1 260 1/2 1 261 1/2 1 262 1/2 1 263 1/2 1 264 1/2 1 265 1/2 1 266 1/2 1 267 1/2 1 268 1/2 1 269 1/2 1 270 1/2 1 271 1/2 1 272 1/2 1 273 1/2 1 274 1/2 1 275 1/2 1 276 1/2 1 277 1/2 1 278 1/2 1 279 1/2 1 280 1/2 1 281 1/2 1 282 1/2 1 283 1/2 1 284 1/2 1 285 1/2 1 286 1/2 1 287 1/2 1 288 1/2 1 289 1/2 1 290 1/2 1 291 1/2 1 292 1/2 1 293 1/2 1 294 1/2 1 295 1/2 1 296 1/2 1 297 1/2 1 298 1/2 1 299 1/2 1 300 1/2 1 301 1/2 1 302 1/2 1 303 1/2 1 304 1/2 1 305 1/2 1 306 1/2 1 307 1/2 1 308 1/2 1 309 1/2 1 310 1/2 1 311 1/2 1 312 1/2 1 313 1/2 1 314 1/2 1 315 1/2 1 316 1/2 1 317 1/2 1 318 1/2 1 319 1/2 1 320 1/2 1 321 1/2 1 322 1/2 1 323 1/2 1 324 1/2 1 325 1/2 1 326 1/2 1 327 1/2 1 328 1/2 1 329 1/2 1 330 1/2 1 331 1/2 1 332 1/2 1 333 1/2 1 334 1/2 1 335 1/2 1 336 1/2 1 337 1/2 1 338 1/2 1 339 1/2 1 340 1/2 1 341 1/2 1 342 1/2 1 343 1/2 1 344 1/2 1 345 1/2 1 346 1/2 1 347 1/2 1 348 1/2 1 349 1/2 1 350 1/2 1 351 1/2 1 352 1/2 1 353 1/2 1 354 1/2 1 355 1/2 1 356 1/2 1 357 1/2 1 358 1/2 1 359 1/2 1 360 1/2 1 361 1/2 1 362 1/2 1 363 1/2 1 364 1/2 1 365 1/2 1 366 1/2 1 367 1/2 1 368 1/2 1 369 1/2 1 370 1/2 1 371 1/2 1 372 1/2 1 373 1/2 1 374 1/2 1 375 1/2 1 376 1/2 1 377 1/2 1 378 1/2 1 379 1/2 1 380 1/2 1 381 1/2 1 382 1/2 1 383 1/2 1 384 1/2 1 385 1/2 1 386 1/2 1 387 1/2 1 388 1/2 1 389 1/2 1 390 1/2 1 391 1/2 1 392 1/2 1 393 1/2 1 394 1/2 1 395 1/2 1 396 1/2 1 397 1/2 1 398 1/2 1 399 1/2 1 400 1/2 1 401 1/2 1 402 1/2 1 403 1/2 1 404 1/2 1 405 1/2 1 406 1/2 1 407 1/2 1 408 1/2 1 409 1/2 1 410 1/2 1 411 1/2 1 412 1/2 1 413 1/2 1 414 1/2 1 415 1/2 1 416 1/2 1 417 1/2 1 418 1/2 1 419 1/2 1 420 1/2 1 421 1/2 1 422 1/2 1 423 1/2 1 424 1/2 1 425 1/2 1 426 1/2 1 427 1/2 1 428 1/2 1 429 1/2 1 430 1/2 1 431 1/2 1 432 1/2 1 433 1/2 1 434 1/2 1 435 1/2 1 436 1/2 1 437 1/2 1 438 1/2 1 439 1/2 1 440 1/2 1 441 1/2 1 442 1/2 1 443 1/2 1 444 1/2 1 445 1/2 1 446 1/2 1 447 1/2 1 448 1/2 1 449 1/2 1 450 1/2 1 451 1/2 1 452 1/2 1 453 1/2 1 454 1/2 1 455 1/2 1 456 1/2 1 457 1/2 1 458 1/2 1 459 1/2 1 460 1/2 1 461 1/2 1 462 1/2 1 463 1/2 1 464 1/2 1 465 1/2 1 466 1/2 1 467 1/2 1 468 1/2 1 469 1/2 1 470 1/2 1 471 1/2 1 472 1/2 1 473 1/2 1 474 1/2 1 475 1/2 1 476 1/2 1 477 1/2 1 478 1/2 1 479 1/2 1 480 1/2 1 481 1/2 1 482 1/2 1 483 1/2 1 484 1/2 1 485 1/2 1 486 1/2 1 487 1/2 1 488 1/2 1 489 1/2 1 490 1/2 1 491 1/2 1 492 1/2 1 493 1/2 1 494 1/2 1 495 1/2 1 496 1/2 1 497 1/2 1 498 1/2 1 499 1/2 1 500 1/2 1 501 1/2 1 502 1/2 1 503 1/2 1 504 1/2 1 505 1/2 1 506 1/2 1 507 1/2 1 508 1/2 1 509 1/2 1 510 1/2 1 511 1/2 1 512 1/2 1 513 1/2 1 514 1/2 1 515 1/2 1 516 1/2 1 517 1/2 1 518 1/2 1 519 1/2 1 520 1/2 1 521 1/2 1 522 1/2 1 523 1/2 1 524 1/2 1 525 1/2 1 526 1/2 1 527 1/2 1 528 1/2 1 529 1/2 1 530 1/2 1 531 1/2 1 532 1/2 1 533 1/2 1 534 1/2 1 535 1/2 1 536 1/2 1 537 1/2 1 538 1/2 1 539 1/2 1 540 1/2 1 541 1/2 1 542 1/2 1 543 1/2 1 544 1/2 1 545 1/2 1 546 1/2 1 547 1/2 1 548 1/2 1 549 1/2 1 550 1/2 1 551 1/2 1 552 1/2 1 553 1/2 1 554 1/2 1 555 1/2 1 556 1/2 1 557 1/2 1 558 1/2 1 559 1/2 1 560 1/2 1 561 1/2 1 562 1/2 1 563 1/2 1 564 1/2 1 565 1/2 1 566 1/2 1 567 1/2 1 568 1/2 1 569 1/2 1 570 1/2 1 571 1/2 1 572 1/2 1 573 1/2 1 574 1/2 1 575 1/2 1 576 1/2 1 577 1/2 1 578 1/2 1 579 1/2 1 580 1/2 1 581 1/2 1 582 1/2 1 583 1/2 1 584 1/2 1 585 1/2 1 586 1/2 1 587 1/2 1 588 1/2 1 589 1/2 1 590 1/2 1 591 1/2 1 592 1/2 1 593 1/2 1 594 1/2 1 595 1/2 1 596 1/2 1 597 1/2 1 598 1/2 1 599 1/2 1 600 1/2 1 601 1/2 1 602 1/2 1 603 1/2 1 604 1/2 1 605 1/2 1 606 1/2 1 607 1/2 1 608 1/2 1 609 1/2 1 610 1/2 1 611 1/2 1 612 1/2 1 613 1/2 1 614 1/2 1 615 1/2 1 616 1/2 1 617 1/2 1 618 1/2 1 619 1/2 1 620 1/2 1 621 1/2 1 622 1/2 1 623 1/2 1 624 1/2 1 625 1/2 1 626 1/2 1 627 1/2 1 628 1/2 1 629 1/2 1 630 1/2 1 631 1/2 1 632 1/2 1 633 1/2 1 634 1/2 1 635 1/2 1 636 1/2 1 637 1/2 1 638 1/2 1 639 1/2 1 640 1/2 1 641 1/2 1 642 1/2 1 643 1/2 1 644 1/2 1 645 1/2 1 646 1/2 1 647 1/2 1 648 1/2 1 649 1/2 1 650 1/2 1 651 1/2 1 652 1/2 1 653 1/2 1 654 1/2 1 655 1/2 1 656 1/2 1 657 1/2 1 658 1/2 1 659 1/2 1 660 1/2 1 661 1/2 1 662 1/2 1 663 1/2 1 664 1/2 1 665 1/2 1 666 1/2 1 667 1/2 1 668 1/2 1 669 1/2 1 670 1/2 1 671 1/2 1 672 1/2 1 673 1/2 1 674 1/2 1 675 1/2 1 676 1/2 1 677 1/2 1 678 1/2 1 679 1/2 1 680 1/2 1 681 1/2 1 682 1/2 1 683 1/2 1 684 1/2 1 685 1/2 1 686 1/2 1 687 1/2 1 688 1/2 1 689 1/2 1 690 1/2 1 691 1/2 1 692 1/2 1 693 1/2 1 694 1/2 1 695 1/2 1 696 1/2 1 697 1/2 1 698 1/2 1 699 1/2 1 700 1/2 1 701 1/2 1 702 1/2 1 703 1/2 1 704 1/2 1 705 1/2 1 706 1/2 1 707 1/2 1 708 1/2 1 709 1/2 1 710 1/2 1 711 1/2 1 712 1/2 1 713 1/2 1 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814 1/2 1 815 1/2 1 816 1/2 1 817 1/2 1 818 1/2 1 819 1/2 1 820 1/2 1 821 1/2 1 822 1/2 1 823 1/2 1 824 1/2 1 825 1/2 1 826 1/2 1 827 1/2 1 828 1/2 1 829 1/2 1 830 1/2 1 831 1/2 1 832 1/2 1 833 1/2 1 834 1/2 1 835 1/2 1 836 1/2 1 837 1/2 1 838 1/2 1 839 1/2 1 840 1/2 1 841 1/2 1 842 1/2 1 843 1/2 1 844 1/2 1 845 1/2 1 846 1/2 1 847 1/2 1 848 1/2 1 849 1/2 1 850 1/2 1 851 1/2 1 852 1/2 1 853 1/2 1 854 1/2 1 855 1/2 1 856 1/2 1 857 1/2 1 858 1/2 1 859 1/2 1 860 1/2 1 861 1/2 1 862 1/2 1 863 1/2 1 864 1/2 1 865 1/2 1 866 1/2 1 867 1/2 1 868 1/2 1 869 1/2 1 870 1/2 1 871 1/2 1 872 1/2 1 873 1/2 1 874 1/2 1 875 1/2 1 876 1/2 1 877 1/2 1 878 1/2 1 879 1/2 1 880 1/2 1 881 1/2 1 882 1/2 1 883 1/2 1 884 1/2 1 885 1/2 1 886 1/2 1 887 1/2 1 888 1/2 1 889 1/2 1 890 1/2 1 891 1/2 1 892 1/2 1 893 1/2 1 894 1/2 1 895 1/2 1 896 1/2 1 897 1/2 1 898 1/2 1 899 1/2 1 900 1/2 1 901 1/2 1 902 1/2 1 903 1/2 1 904 1/2 1 905 1/2 1 906 1/2 1 907 1/2 1 908 1/2 1 909 1/2 1 910 1/2 1 911 1/2 1 912 1/2 1 913 1/2 1 914 1/2 1 915 1/2 1 916 1/2 1 917 1/2 1 918 1/2 1 919 1/2 1 920 1/2 1 921 1/2 1 922 1/2 1 923 1/2 1 924 1/2 1 925 1/2 1 926 1/2 1 927 1/2 1 928 1/2 1 929 1/2 1 930 1/2 1 931 1/2 1 932 1/2 1 933 1/2 1 934 1/2 1 935 1/2 1 936 1/2 1 937 1/2 1 938 1/2 1 939 1/2 1 940 1/2 1 941 1/2 1 942 1/2 1 943 1/2 1 944 1/2 1 945 1/2 1 946 1/2 1 947 1/2 1 948 1/2 1 949 1/2 1 950 1/2 1 951 1/2 1 952 1/2 1 953 1/2 1 954 1/2 1 955 1/2 1 956 1/2 1 957 1/2 1 958 1/2 1 959 1/2 1 960 1/2 1 961 1/2 1 962 1/2 1 963 1/2 1 964 1/2 1 965 1/2 1 966 1/2 1 967 1/2 1 968 1/2 1 969 1/2 1 970 1/2 1 971 1/2 1 972 1/2 1 973 1/2 1 974 1/2 1 975 1/2 1 976 1/2 1 977 1/2 1 978 1/2 1 979 1/2 1 980 1/2 1 981 1/2 1 982 1/2 1 983 1/2 1 984 1/2 1 985 1/2 1 986 1/2 1 987 1/2 1 988 1/2 1 989 1/2 1 990 1/2 1 991 1/2 1 992 1/2 1 993 1/2 1 994 1/2 1 995 1/2 1 996 1/2 1 997 1/2 1 998 1/2 1 999 1/2 1 1000 1/2 1

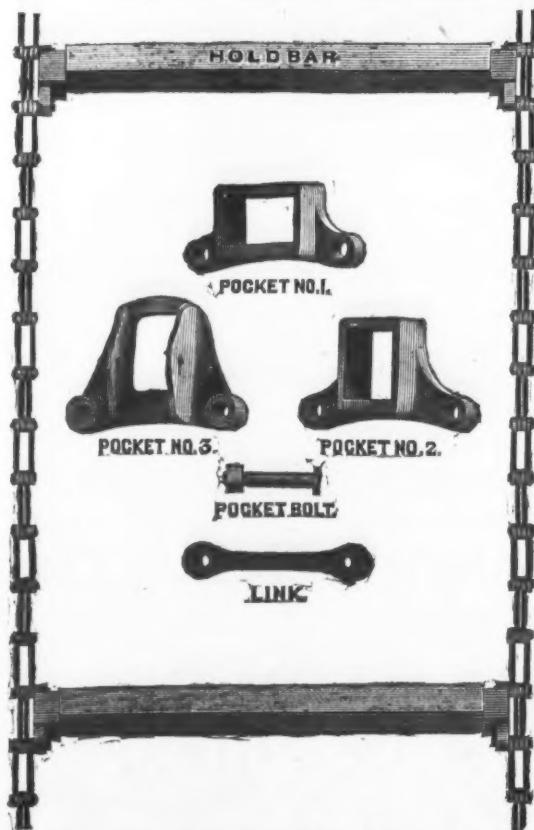
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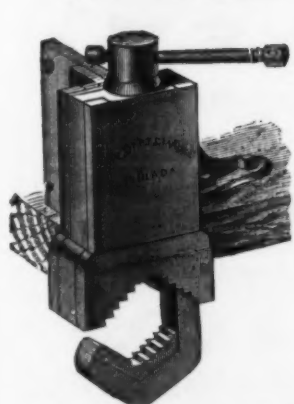
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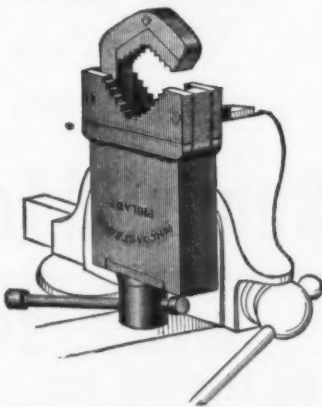
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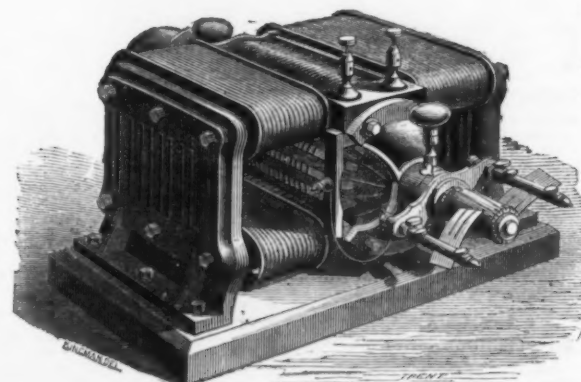
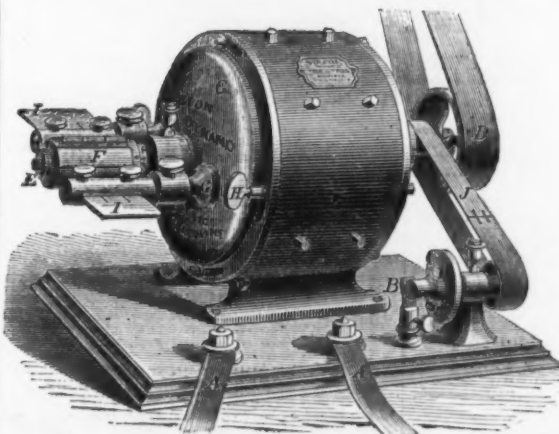
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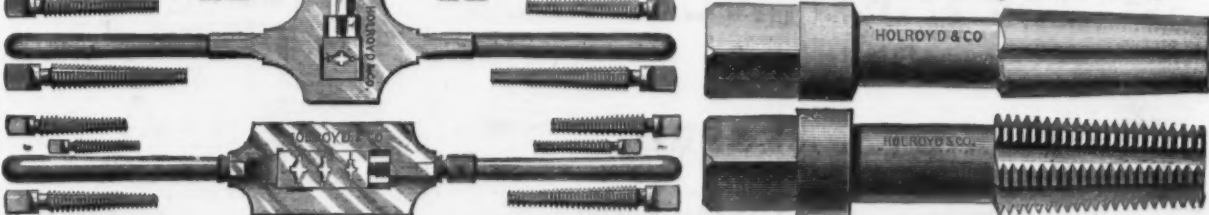
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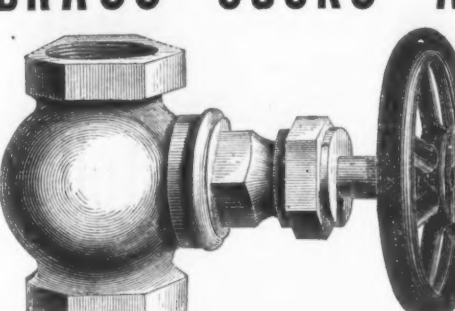
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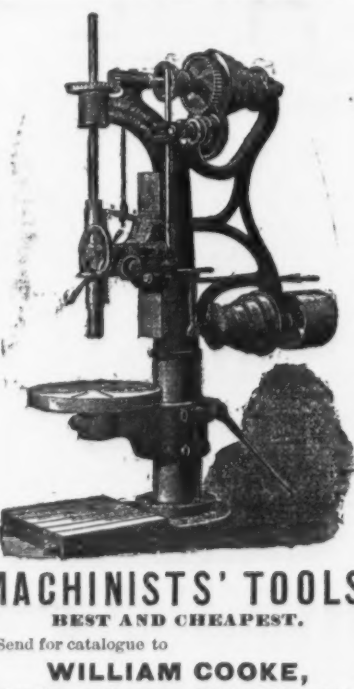
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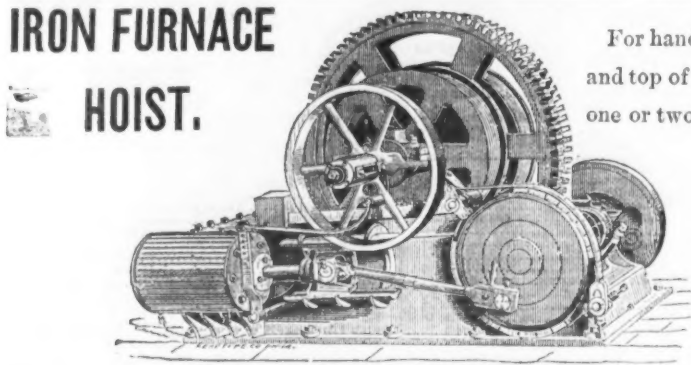
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St. Louis Metal Market.
(Corrected Weekly by Messrs. R. Sellow & Co.)

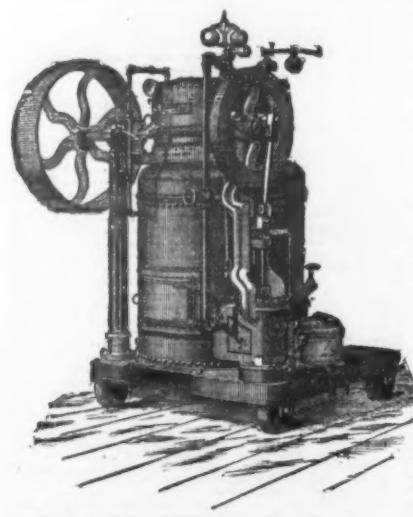
Tin Plate.	DX, 12 1/2 x 17, B. Char.,	per 100 lbs.
No. 10, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 12, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 14, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 16, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 18, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 20, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 22, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 24, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 26, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 28, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 30, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 32, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 34, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 36, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 38, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 40, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 42, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 44, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 46, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 48, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 50, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 52, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 54, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 56, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 58, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 60, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 62, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 64, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 66, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 68, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 70, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 72, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 74, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 76, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 78, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 80, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 82, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 84, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 86, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
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No. 90, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
No. 92, 12 1/2 x 17, B. Char.,	per 100 lbs.	11.25
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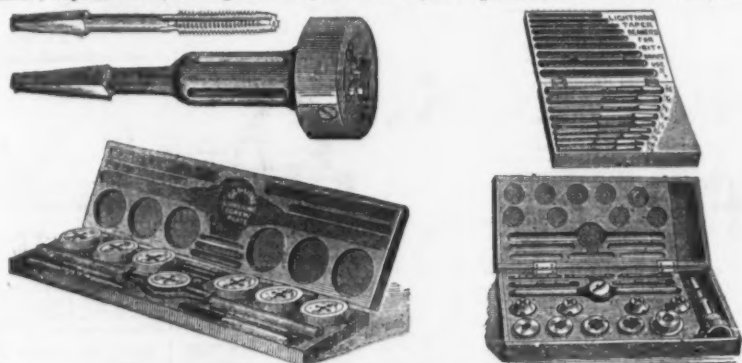
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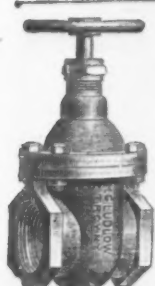
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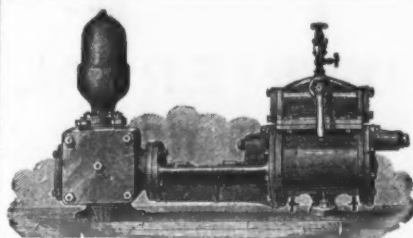
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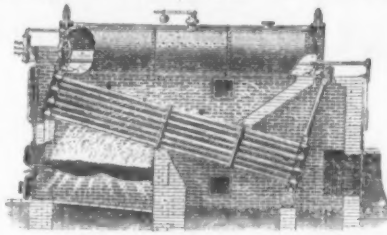
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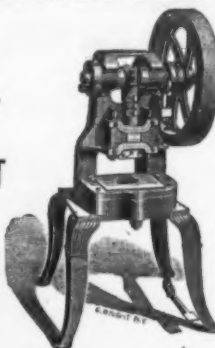
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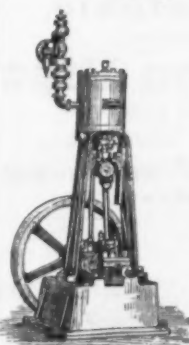
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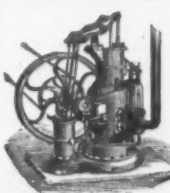


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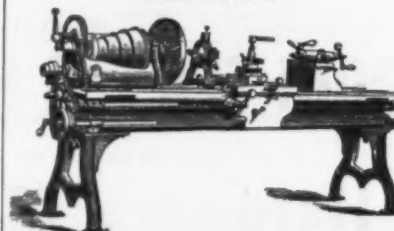
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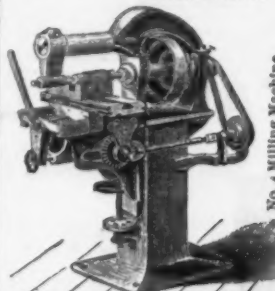
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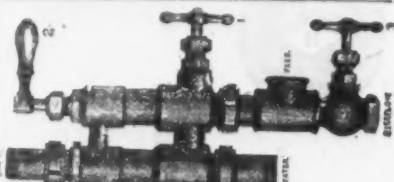
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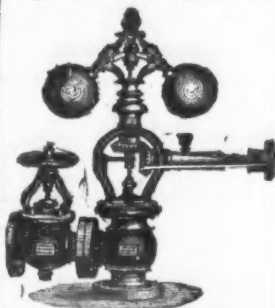
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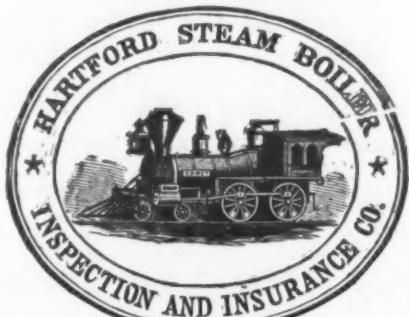
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1 3/4	27.00	31.00	2.75	7.50
2	30.00	37.00	3.25	9.00
2 1/4	36.00	41.00	3.50	11.00
2 1/2	40.00	46.00	3.75	12.00
2 3/4	45.00	52.00	4.25	14.00
3	54.00	62.00	4.50	17.00
3 1/4	64.00	73.00	5.00	21.00
3 1/2	74.00	84.00	5.50	25.00
3 3/4	84.00	95.00	6.00	31.00
4	97.00	109.00	6.50	37.00
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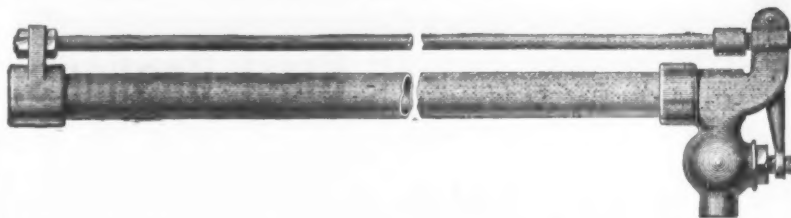
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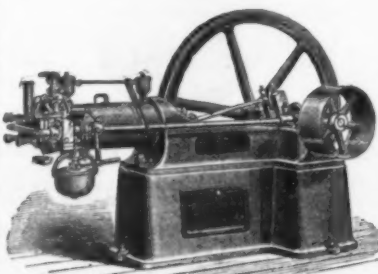
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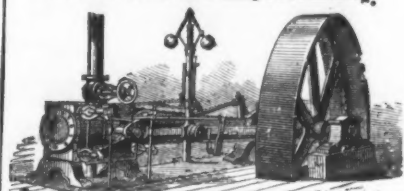
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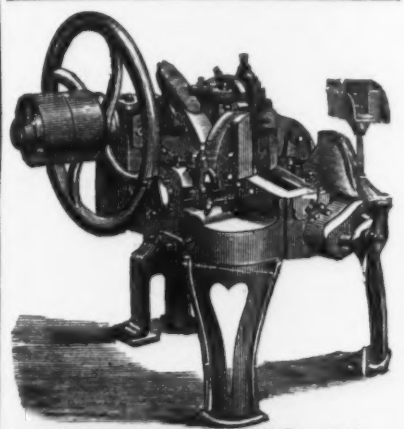
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50 BEEKMAN STREET, NEW YORK.TRIAL OF THE IMPROVED LIGHTNING SAW.
The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. Boynton, of New York, they witnessed a trial of the New Lightning Saw, patented March 26, 1878. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corlies, Morell, Lynch, and other members of the commission witnessed the trial and timed the cutting. The Emperor remarked, "That was fast, very fast cutting." Last evening the Emperor made another examination of the saw.—Philadelphia Press, June 30.

"Boynton's Saws were effectually tested before the judges at the Philadelphia Fair, July 6th and 7th. An ash log, 11 inches in diameter, was sawed off, with a 4 1/2 foot lightning cross cut, by two men, in precisely 6 seconds, as timed by the chairman of the Centennial Judges of Class Fifteen. The speed is unprecedented, and would cut a cord of wood in 4 minutes. The representatives of Russia, Austria, France, Italy, Spain, Belgium, Sweden, England, and several other countries, were present, and expressed their high appreciation." Received Medal and Highest Award of Centennial World's Fair, 1876. \$1000 challenge was prominently displayed for six months, and the numerous saw manufacturers of the world dared not accept it, or test in a competition so hopeless.

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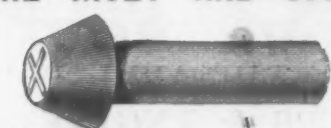
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